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This working paper presents six analyses first reported at the annual convention of the American Psychological Association, August 31, 1968. Most of the individual chapters were written independently. All are, however, concerned with the Youth in Transition Project, a nationwide longitudinal study of adolescent boys. The five chapters presenting findings are all based on the initial cross-sectional data collection. The analyses include: (1) the design and sample for a nationwide longitudinal study of adolescent boys; (2) the development of a summary measure of socio-economic status; (3) intellectual aptitudes and abilities: (a) relationship to selected criteria, and (b) environmental factors and racial differences in test performance; (4) a preliminary investigation of status inconsistency effects; (5) dimensions of adjustment in adolescent boys: Negro-white comparisons; and (6) achievement motivation, grades, and instrumentality. (IM)

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Working Paper 3: Some Studies of Background Factors, Achievement, and Mental Health in a Nationwide Sample of Adolescent Boys

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October 1968

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U. S. DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE

Office of Education

PREFACE

This working paper presents several analyses first reported at the annual convention of the American Psychological Association, August 31, 1968, in a symposium chaired by David Bushnell, of the U. S. Office of Education. The complete symposium findings, in several cases extended and elaborated, are contained in the following chapters.

Although most of the individual chapters in this volume were written independently, there are one or two characteristics common to all. First, all are concerned with the Youth in Transition project--a nationwide longitudinal study of adolescent boys conducted by the Survey Research Center under the sponsorship of the United States Office of Education.[1] In addition, the five chapters presenting findings are all based on the initial cross-sectional data collection.

One other common theme may be noted in several analyses that deal with racial differences and similarities. The chapters by Bachman and Bloom indicate that the same dimensions of socio-economic status and mental health can be applied to both subgroups. Mednick's chapter further suggests that overall racial differences in test scores are dramatically reduced when one focuses on individuals in more closely matched situations (i.e., whites and Negroes exposed to the same school, region, socio-economic level, etc.). At the risk of oversimplifying, it seems to us that the similarities which have thus far appeared between white and Negro subgroups in our study are more impressive than any differences.

The present working paper is the third in a series designed to report research carried out as a part of the Youth in Transition project. The working paper series is an integral part of the total publication program planned for the study, and should be viewed in that context.

Publication Plans. The publication program for the study involves three levels: working papers, research monographs, and books. The working paper series is designed to provide fairly immediate documentation and distribution of findings to sponsors and colleagues working in related fields. It is anticipated that the first form of publication for any major set of findings will be the working paper series.

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[1] For a complete description of the study, its design and purposes, see Bachman, J. G., Kahn, R. L., Mednick, M. T., Davidson, T. N., & Johnston, L. D. Youth in transition: volume I -- Blueprint for a longitudinal study of adolescent boys. Ann Arbor, Mich.: Survey Research Center, Institute for Social Research, 1967.

The next level of publication, the research monograph series, is designed to communicate the scientific findings of the study to a broader professional audience. The research monographs will include much of the information first available in the working paper series, but will do so in a more polished and finished form. Some monographs will be adapted fairly directly from corresponding working papers; others may combine and integrate a number of working papers. It is intended that the research monograph series will eventually provide a complete and fully documented statement of the results of the research.

The third level of publication is expected to be one or more books summarizing and integrating many of the findings reported in the monograph series. It is important to note that this form of publication will not be merely a repetition or summarization of what is already presented in the research monograph series; rather, it is intended that the books based on the study will concentrate more heavily on summary conclusions and policy implications. The books will be, in a sense, secondary material building upon the primary analyses reported in fuller detail in the monographs; they will be more interpretative, less data-laden, and will cite the research monograph series in order to refer intensive readers to the source material.

The three levels of publication described above represent the major outlets contemplated for our findings. Additional means of communication will include occasional doctoral dissertations, journal articles, and papers and symposia presented from time to time. Some findings first published in these forms, especially doctoral dissertations, may eventually be included in the working paper and/or research monograph series.

Working Paper Series. Given its purpose of documenting our work promptly and extensively, the working paper series is not subject to stringent editorial requirements; on the contrary, our primary emphasis is upon getting things written soon after they happen, leaving the more complete and polished treatment for the monograph series. (An example of this process is the first working paper, produced in May of 1967; it was extensively revised and published as our first monograph at the end of 1967.) Our intention is to include a wide range of products in the working paper series, such as description of research design and procedures (Working Paper No. 1), reports of scores and response distributions (Working Paper No. 2), and discussion and interpretation of findings (the present Working Paper No. 3).

As noted earlier, the audience for the working paper series includes sponsors and colleagues working in closely related fields. Another very important audience includes our own project personnel. At this writing the project has been in operation for over three years; it is scheduled to continue for another three years, and it may well lead to further studies. It thus becomes important to provide continuity in purpose and knowledge of the project in the face of inevitable changes in staff, and the Working Papers are one of the means of insuring such continuity.

Acknowledgments. Any project of the size and scope of the Youth in Transition study involves the collaborative effort of many people. Thanks are due to many staff members of the Institute for Social Research: the Sampling Section; the Field Section, including field supervisors and interviewers; the Coding Section; and the Computer Services Facility. In particular, we wish to acknowledge the work of our project staff, past and present:

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Most of the computer analyses for Working Paper 3 were carried out by Terrence Davidson and Jerome Johnston, with invaluable assistance provided by Karen Dickinson and other staff members of the Computer Services Facility. Chapters of the working paper were edited and typed by Allison Arscott, Sally Iman, and Ilona Wirtanen.

We continue to reserve our final word of thanks to the more than two thousand tenth-grade boys who, in Fall of 1966, contributed their time and effort to provide the data presented here.

Jerald G. Bachman
Robert L. Kahn

Principal Investigators

Post Script. A calculation error introduced a constant bias in the summary index of socio-economic status initially reported by Bachman and used also by Mednick in her paper. A careful re-analysis confirmed our expectation that our substantive findings initially reported in the symposium were in no way distorted by this error. Table 7 in Bachman's paper reflects the corrected scores for the SES index, whereas Mednick's Table 2 does not. Any reader wishing to compare these two tables will recognize that while the mean scores differ by a constant amount, standard deviations and correlations with test scores are virtually identical.

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Design and Sample for a Nationwide Longitudinal Study of Adolescent Boys

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The term "environment" is heard a great deal of late -- we hear of enriched ones, polluted ones, physical, moral, and social ones. In most discussions of environments the focus is on how they affect their existing occupants. Less is heard about how people select themselves into and out of them.

Youth in Transition is a study concerned with both problems. The particular environments we are dealing with are social environments, including high schools, work settings, and colleges. The people we are studying are boys of high school age throughout the United States. By following a panel of boys over a three year period we hope to learn more about why some leave the high school environment early (drop out) and some do not, and why some who do drop out enter the world of work and some do not. It is of equal importance to us, however, to discover how boys change and develop differently once they are in one of the three important environments of school, work, or unemployment. For the great majority who remain in high school, we particularly want to learn whether different types of schools lead to different kinds of changes, and eventually why some graduates go on for further education and others do not. Finally, we want to know how well boys fit into their post-high school environment -- whether it be college or work -- and what seems to lead to good and bad "fits" between these boys and their later environments.

To accomplish these multiple and complex objectives, we felt that we would need large samples of both boys and environments. Therefore, we drew a representative national sample of tenth-grade boys in public high school at the time of our first data collection, which was September of 1966. A multi-stage sampling procedure was used to secure this sample in clusters by school. By getting a cluster of about 25 boys in each school we were able to secure reports from a number of boys about the same objective environment, which obviously permits a more reliable estimate of the true nature of that environment. The clustering also made feasible the collection of additional data about the school environments from the teachers, counselors, and principal in all schools in which our subjects were located.

Eighty-eight schools were initially sampled from across the United States; 81 percent agreed to participate. Replacements, which were matched for region and school size, were secured for all but one of the refusing schools. Of the 2277 boys in the participating schools who then were asked to take part in the study, only 3 percent failed to supply us with a complete set of instruments. Hopefully, then, we begin with little bias in our panel composition due to refusal rates of either schools or boys.

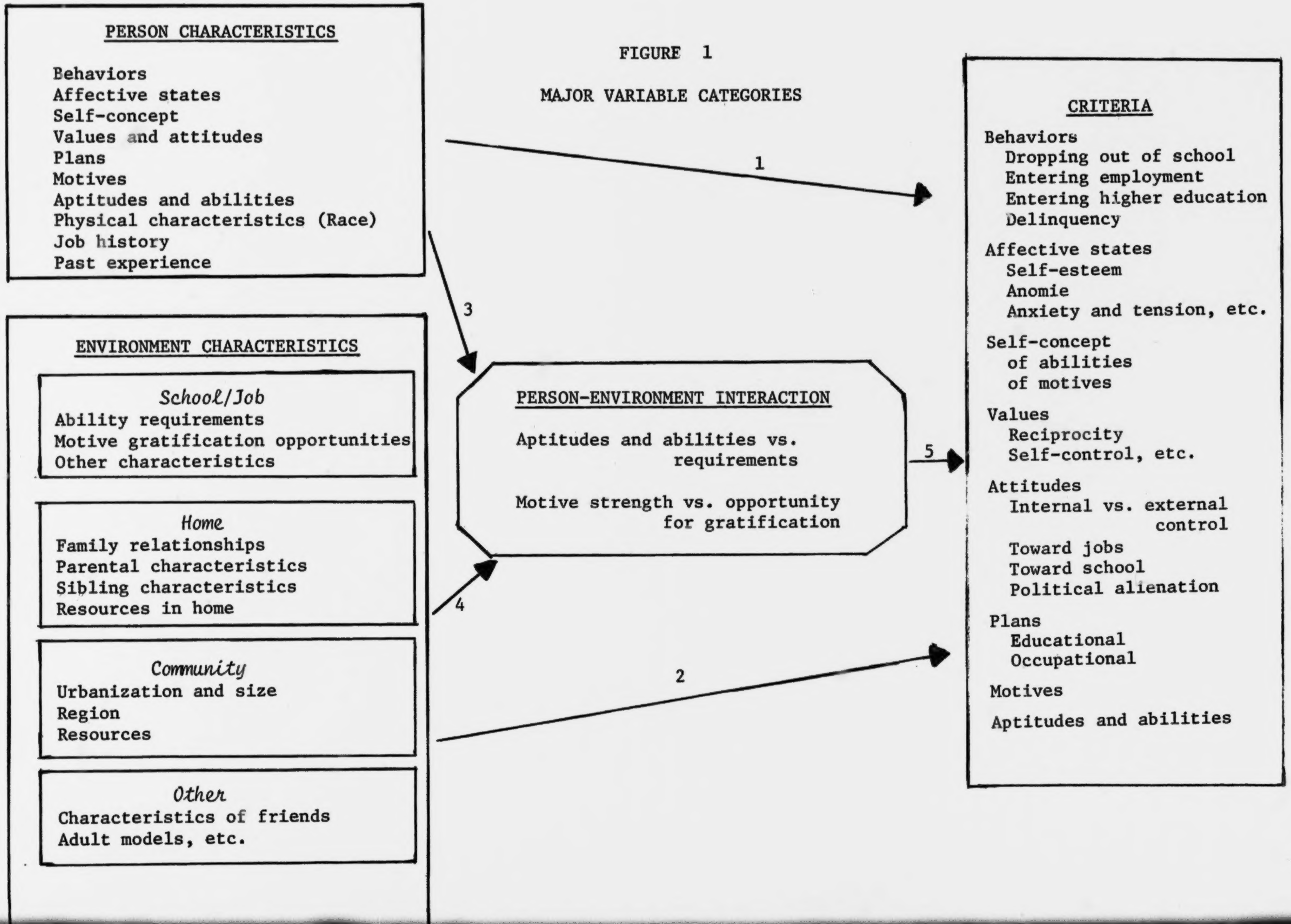
Having thus established a panel of 2213 actual cases, we introduced some corrective weighting to increase sample accuracy. The weighting added the equivalent of 301 cases to our sample size. Therefore, our statistics will reflect an overall N of 2514. The resulting set of cases is a representative national sample of boys who were beginning 10th grade in 1966; I will not go into a demographic description of it, other than to say that the median and modal age was 15 and that 12 percent are Negro.

As I said earlier, we are interested in studying the effects of social environments over time. This necessitates a longitudinal research design in which characteristics of the person are measured and later remeasured to identify change. To accomplish this we are making three data collections from our panel of boys at approximately one-and-a-half year intervals. The last collection, early in 1970, corresponds to almost one year after graduation from high school.

The dimensions of the person in which we hope to measure change during the three years include certain mental health characteristics (or affective states), a number of attitudes and values, several motives, aspects of self-concept, occupational and educational plans, and the frequency of certain important behaviors such as delinquent acts. (More

FIGURE 1

MAJOR VARIABLE CATEGORIES


PERSON CHARACTERISTICS
Behaviors
Affective states
Self-concept
Values and attitudes
Plans
Motives
Aptitudes and abilities
Physical characteristics (Race)
Job history
Past experience
ENVIRONMENT CHARACTERISTICS
School/Job
Ability requirements
Motive gratification opportunities
Other characteristics
Home
Family relationships
Parental characteristics
Sibling characteristics
Resources in home
Community
Urbanization and size
Region
Resources
Other
Characteristics of friends
Adult models, etc.
PERSON-ENVIRONMENT INTERACTION
Aptitudes and abilities vs. requirements
Motive strength vs. opportunity for gratification
CRITERIA
Behaviors
Dropping out of school
Entering employment
Entering higher education
Delinquency
Affective states
Self-esteem
Anomie
Anxiety and tension, etc.
Self-concept
of abilities
of motives
Values
Reciprocity
Self-control, etc.
Attitudes
Internal vs. external control
Toward jobs
Toward school
Political alienation
Plans
Educational
Occupational
Motives
Aptitudes and abilities
1
2
3
4
5

will be said about specific variables in the papers to follow.)

The major conceptual plan of the study is outlined in Figure 1, where the dimensions of change I have just mentioned are given as "criterion variables." Similarly, behaviors like leaving school, entering work, and entering college are considered criteria. All other variables in this diagram will be treated as potential predictors to some or all of the criterion variables. These include characteristics of the person and characteristics of several of the important social environments in which the person is located -- particularly his school, work, family, and community. Note that all variables which are shown as criteria are also to be treated as potential predictors to other criteria; therefore, they are also listed on the predictor side under "person characteristics."

The effects of interactions between person characteristics and environment characteristics, shown in the center box in the diagram, are of particular interest to us. Conceptually, we consider this center box to reflect the derived measures of "fit" or "misfit" between each boy and his social environments. We will pay particular attention here to school and work environments.

Almost all of the variables indicated in Figure 1 were measured in the first data collection, and most will be remeasured in the second and third. The measuring instruments in the first collection were a private interview of about two hours in duration and a battery of tests and questionnaires which was group-administered to all subjects in a school. Both procedures were conducted in the schools by trained Survey Research Center interviewers.

The interview contained our more complex questions -- ones which required open-ended responses or which had contingency questions to follow. It also contained a TAT battery and the Ammons Quick Test of Intelligence. Most of the tests were given in a separate group-administered battery of tests. The group-administered questionnaires consisted of short multiple choice items and contained many of the measures of affective states, values, and attitudes.

The present symposium presents some analyses based on this initial data collection in our longitudinal design. Several papers deal with background factors that we felt were appropriately studied using the cross-sectional data presently available for analysis. A number of papers are also concerned with condensing background characteristics into summary variables which later can serve effectively in more complex longitudinal analyses.

The Development of a Summary Measure of Socio-Economic Status

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The concept of socio-economic status (SES) is of central importance to sociologists and social psychologists. It is a causal factor with wide-ranging impact, worthy of considerable study in its own right. Because of this impact, SES is also a factor to be taken into account when studying other relationships.

It is obvious that in a longitudinal study of adolescent boys, such as the Youth in Transition project, the concept of SES must be treated extensively as both a causal and a control variable. Accordingly, in the design of the study and the development of interview and questionnaire instruments an effort was made to include items that would permit us to place each respondent along one or more SES dimensions. In selecting such items for inclusion, it became quite clear that the concept of SES has not led to a single widely shared operational definition. A variety of measures has been used in studies for purposes of "controlling on SES." Several of these measures were included in our own data collection, with the hope that from them we would be able to develop a summary measure of SES.

The major requirement of such a summary measure is that it be parsimonious. From a theoretical standpoint, to the extent that SES is to be treated as a unitary concept, it should be possible to use the same SES measure in a variety of relationships. From a more pragmatic standpoint, our data analyses would become impossibly complex if we were to apply different measures of SES to different criterion dimensions, or to different social subgroups. This is not to assert that SES really is a single "general" factor; the arguments over such an issue might parallel those relating to the definition and measurement of the concept of intelligence. It is simply the case that for our research purposes it was necessary to develop a general and multi-purpose measure of SES.

The present paper presents the evidence used to develop such a summary measure of SES. This evidence includes correlations between SES measures and a number of potentially related dimensions such as occupational aspiration, self-esteem, scores on tests of aptitude and achievement, and self-reports of delinquent behaviors. More generally, the paper deals with the issue of whether the same items (a) can be used to predict to a variety of criteria, and (b) can yield at least roughly the same set of relationships for white and Negro subgroups in our sample of high school boys.

Measures of SES. The items* considered for inclusion in the summary measure of SES are presented in Table 1. Of the total of ten items considered, three were dropped from further consideration because of large numbers of missing data. The most notable example is Status of Mother's Occupation; since only mothers working outside the home were classified on this scale, a score was available for less than half of all respondents.

The product-moment correlations among the seven remaining SES items are presented in Table 2, along with means, standard deviations,** and frequencies of missing data. (Data for white and Negro subgroups are presented along with data for the total sample of tenth-grade boys; however, we will not deal with these and other subgroup analyses until a later section of the paper.) The intercorrelations in Table 2 range from .04 to .58 for the total sample, with highest intercorrelations among father's occupational status, father's education, and mother's education. On the whole, similar patterns of intercorrelations were found for the white and Negro subgroups.

Selection of Items for Summary Measure of SES. At this point the question remains as to which combination of items would provide the most satisfactory summary measure of SES. Our strategy in answering this question involved relating our SES items to a number of "criterion" dimensions that we considered might be influenced by SES. This set of "validating criteria," sampled from a wide variety of variables being studied in the Youth in Transition project, is presented in Table 3. Three different test scores were included in the list because it seemed quite possible that those tests would relate differently to SES items; one is viewed as a general measure of intelligence (the Quick Test), another (the Matrices test) is intended to be a relatively culture-fair intelligence test, and the last (the Gates Para-

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*This usage of the term "item" includes some composite scores based on a number of questions.

**The standard deviations reported herein are derived from samples clustered in schools, consequently they may systematically underestimate the true standard deviation of the population. The extent of this underestimation has not yet been calculated, so for the present we must assume that the true population values are probably somewhat larger than the sample SD's reported here.

Table 1

S E S Items Proposed for Inclusion in Summary Index

Item Name	Missing Data	Description
Father's Occupation	12%	Ordinal measure based on Duncan level of social status coded from interview responses.
*Mother's Occupation	59%	
Father's Education	9%	Five-point scale coded from interview: less than high school, some high school, high school graduate, some college, college graduate.
Mother's Education	6%	
Resources in Home Environment	3%	First part of the Mathis "Environmental Participation Index"--the respondent checks which of 19 items are available in his home. (An eight-point bracketed scale was used in the present analyses: a code of "1" represented 5 or fewer items, "2" represented 6 or 7 items, "3" represented 8 or 9 items, ..."8" represented 18 or 19 items.)
Number of Books in Home	2%	Six-point questionnaire scale. (The scale ranged from "1" representing "None, or very few," through "3" representing "One bookcase full," to "6" representing "A room full--a library.")
Rooms per Person in Home	6%	Number of rooms in home divided by number of persons living in home, based on responses to open-ended questionnaire items.
*Father's Income	36%	Eight-point pre-coded questionnaire scale, with "1" representing "Under $2,000" and "8" representing "$15,000 or over."
*Family Total Income	39%	
**Adequacy of Family Finances	3%	Six-item adjective response scale in questionnaire making qualitative appraisal of family finances.

*Excluded from index due to excessive missing data.

**Excluded from index due to evidence of low validity.

Table 2

Means, Standard Deviations, and Intercorrelations of SES Items

NOTE: Each cell entry in this table consists of three separate scores as follows:

Total sample (N=2514 weighted cases)
Whites only (N=2177 weighted cases)
Negroes only (N=291 weighted cases)

SES Item	Mean	Standard Deviation**	% Missing Data	Product-Moment Correlations					
				1.	2.	3.	4.	5.	6.
1. FATHER'S OCCUPATION	38.1 39.8 *23.9*	23.7 23.8 *17.7*	12 10 *24*						
2. FATHER'S EDUCATION	2.68 2.72 *2.31*	1.28 1.29 *1.17*	9 7 *27*	58 57 *47*					
3. MOTHER'S EDUCATION	2.76 2.82 *2.44*	1.05 1.03 *1.09*	6 5 *11*	38 37 *29*	51 51 *43*				
4. RESOURCES IN HOME ENVIRONMENT	4.53 4.66 *3.59*	1.23 1.15 *1.45*	3 2 *9*	31 27 *26*	34 33 *34*	33 32 *28*			
5. NUMBER OF BOOKS IN HOME	3.54 3.59 *3.16*	1.17 1.15 *1.25*	2 2 *7*	30 31 *10*	35 35 *27*	32 32 *19*	43 42 *39*		
6. ROOMS PER PERSON IN HOME	1.90 1.96 *1.51*	0.79 0.78 *0.74*	6 5 *15*	23 20 *19*	27 25 *34*	25 22 *33*	28 23 *30*	24 23 *20*	
7. ADEQUACY OF FAMILY FINANCES	3.08 * *2.94*	0.74 * *0.97*	3 * *8*	21 * *09*	18 * *14*	15 * *04*	23 * *14*	19 * *21*	* * *

*Correlation not computed.

**Based on clustered sample. See second footnote on page 2-2.

Table 3

Measures Used as Validating Criteria

Measure	Description
Occupational Aspiration	Ordinal measure based on Duncan level of social status, coded from interview statement of respondent's future plans.
Internal Control	Rotter's measure of perceived personal control over one's fate, based on 15 questionnaire items.
Self-Esteem	Index based on 14 questionnaire items.
Test Anxiety	Index based on 16 questionnaire items, adapted by Irwin Katz from the Mandler-Sarason Test Anxiety Questionnaire.
Grades	Self-report of average grade in previous year (9th grade), interview item.
Delinquent Behavior	Index based on 26 self-report items in a special confidential questionnaire, adapted from a measure developed by Martin Gold.
Quick Test of Intelligence	An individually-administered test of recognition vocabulary, developed by Ammons and Ammons.
Matrices Test	A group-administered test of reasoning ability, developed by the U.S. Employment Service and patterned after Raven's Progressive Matrices.
Reading Achievement	Group-administered Paragraph Comprehension Test taken from the Gates Reading Survey.

graph Comprehension Test) is a measure of reading achievement.

The first step in our strategy called for examining bivariate relationships between each "validating criterion" and each of the SES items. Our expectation was that some subset of the SES items would emerge consistently as the strongest predictors of the several criteria. Table 4 presents the correlations between SES predictors and "validating criteria." The most consistently "predictable" criteria were found to be the test scores and occupational aspiration, while delinquent behavior was least "predictable." (A substantive discussion of the relationships between SES and the "validating criteria" is presented later in this paper.) Turning to the seven SES predictors we find that the first six items all show moderate to strong relationships with occupational aspiration and test scores. The "adequacy of family finances" item, by way of contrast, shows very little strength in predicting to any of the "validating criteria"; accordingly, this item was dropped from further consideration in building the summary measure of SES.

While the correlations in Table 4 indicate that each of the first six SES items is a better predictor than the seventh, it is not yet clear whether a summary measure of SES should contain all six items, nor is it clear whether there is a single optimal weighting of items that would maximize multi-variate prediction of each of the "validating criteria." In order to obtain further evidence bearing on these questions, our next step called for a series of stepwise multiple regression analyses; the six SES items were permitted to enter as predictors* for each "validating criterion."

Two observations may be based on the results of the multiple regression analyses, presented in Table 5. First, the multiple correlations shown along the bottom row of the table are higher, often substantially higher, than the zero-order relationships shown in Table 4. This general finding was of course expected, but the size of the multiple correlations may be taken as a sort of upper limit obtainable by a summary measure optimally weighting our six SES items to predict to the specific criterion variable in question. The second observation is based on an examination of the beta weights displayed in the remainder of Table 5. These results do not indicate any single weighting of SES items that is common to all or even most "validating criteria." Quite

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*The specified criterion for entering a variable as a predictor was that it contribute a significant ($p \leq .05$) increment to variance explained.

Table 4

Correlations Between SES Items and "Validating Criteria"

NOTE: Each cell in this table consists of three separate scores as follows:

Total sample (N=2514 weighted cases)
Whites only (N=2177 weighted cases)
Negroes only (N=291 weighted cases)

	Validating Criteria								
	Occupational Aspiration	Internal Control	Self-Esteem	Test Anxiety	Grades (9th grade average)	Delinquent Behavior	Quick Test of Intelligence	Matrices Test	Reading Achievement
SES Items — MEAN	60.3 61.4 *54.0*	1.66 1.67 *1.61*	3.71 3.69 *3.81*	1.49 1.48 *1.53*	4.00 4.02 *3.81*	1.63 1.63 *1.56*	108.5 110.4 *95.5*	22.4 23.3 *16.0*	36.0 37.0 *28.7*
SES Items — SD**	26.5 26.2 *27.6*	0.19 0.19 *0.17*	0.50 0.51 *0.46*	0.24 0.24 *0.21*	0.72 0.73 *0.63*	0.53 0.52 *0.60*	12.4 10.8 *14.8*	5.8 5.0 *7.2*	6.2 4.9 *9.0*
1. FATHER'S OCCUPATION	30 31 *21*	10 08 *09*	06 07 *02*	-05 -03 *-08*	15 15 *-03*	04 03 *-04*	31 26 *25*	22 17 *09*	27 24 *14*
2. FATHER'S EDUCATION	31 31 *27*	14 12 *28*	13 13 *13*	-10 -10 *-13*	17 18 *07*	01 01 *03*	32 30 *37*	23 20 *29*	28 25 *40*
3. MOTHER'S EDUCATION	28 28 *18*	10 08 *12*	11 13 *02*	-12 -11 *-11*	19 20 *04*	-05 -05 *-11*	31 28 *29*	21 16 *29*	25 23 *24*
4. RESOURCES IN HOME ENVIRONMENT	22 20 *21*	14 11 *20*	08 10 *13*	-10 -07 *-20*	15 14 *10*	02 00 *04*	34 22 *44*	35 24 *41*	35 26 *34*
5. NUMBER OF BOOKS IN HOME	22 23 *04*	15 14 *12*	09 10 *03*	-09 -09 *04*	16 16 *13*	03 03 *-03*	28 26 *18*	25 22 *18*	26 23 *26*
6. ROOMS PER PERSON IN HOME	20 18 *24*	07 04 *18*	08 11 *-03*	-10 -07 *-15*	20 21 *04*	01 -02 *11*	30 24 *30*	21 12 *33*	26 19 *34*
7. ADEQUACY OF FAMILY FINANCES	10 * *-11*	01 * *01*	10 * *-01*	-03 * *01*	07 * *04*	-00 * *04*	06 * *01*	09 * *10*	07 * *05*

Decimals omitted from correlation coefficients.

*Not computed.

**Based on clustered sample. See second footnote on page 2-2.

Table 5

Multiple Regression Analyses Relating SES Items to "Validating Criteria"

NOTE: Each cell entry in this table consists of three separate scores as follows:

Total sample (N=2514 weighted cases)
Whites only (N=2177 weighted cases)
Negroes only (N=291 weighted cases)

	SES Items	Validating Criteria								
		Occupational Aspiration	Internal Control	Self-Esteem	Test Anxiety	Grades (9th grade average)	Delinquent Behavior	Quick Test of Intelligence	Matrices Test	Reading Achievement
Beta Weights	1. FATHER'S OCCUPATION	15 16 *08*	-- -- *-07*	-04 -03 *-07*	04 06 *02*	03 04 *-08*	05 05 *-06*	12 08 *04*	07 04 *-12*	10 10 *-09*
	2. FATHER'S EDUCATION	10 10 *16*	08 07 *26*	10 08 *18*	-05 -06 *-07*	03 04 *05*	01 -- *09*	07 10 *17*	03 07 *13*	06 07 *28*
	3. MOTHER'S EDUCATION	11 12 *02*	-- -- *-03*	05 06 *-03*	-08 -08 *-03*	09 10 *01*	-09 -08 *-20*	11 12 *08*	04 02 *13*	06 07 *02*
	4. RESOURCES IN HOME ENVIRONMENT	06 04 *12*	08 05 *12*	02 03 *15*	-05 -01 *-22*	03 02 *06*	02 -- *06*	17 05 *32*	25 14 *32*	21 13 *17*
	5. NUMBER OF BOOKS IN HOME	06 08 *-10*	09 10 --	04 04 *-04*	-03 -05 *16*	07 06 *10*	03 04 *-06*	07 11 *-04*	08 11 *-03*	07 06 *08*
	6. ROOMS PER PERSON IN HOME	08 07 *15*	01 -02 *08*	04 06 *-10*	-05 -04 *-07*	14 15 *-01*	01 -02 *15*	16 14 *11*	09 03 *17*	13 09 *19*
MULTIPLE R		39 39 *35*	19 1[illegible] *32*	15 17 *21*	16 15 *27*	27 27 *16*	09 08 *22*	47 40 *52*	39 29 *50*	43 35 *50*

Decimals omitted

the contrary, the beta weights vary markedly from one criterion to another, showing much less stability and consistency than do the correlations in Table 4.

Computation of Summary SES Index. Given the fact that all six SES items appeared to provide at least some degree of prediction to one or more of the "validating criteria," and given the absence of evidence for a set of "optimizing" weights to be applied to these items, it seemed appropriate to derive a mean score in which the six items would contribute equally. This step was carried out following the procedures summarized in Table 6.

Correlations between the summary SES index and each of the "validating criteria" are presented in Table 7. These correlations are nearly identical to the multiple correlations that appear at the bottom of Table 5, even though the multiple correlations are based on an optimal set of item weightings for each criterion whereas the index score weights the six SES items equally.*

---

*This conclusion is less clear for the Negro subgroup. In this case the multiple correlations are somewhat higher than the correlations with the summary SES index. This difference is attributable to the somewhat lower reliability of data based on a sample of less than three hundred (as contrasted with the total sample in excess of two thousand). The multiple regression analysis takes maximum "advantage" of the error variance in the smaller Negro subgroup; it is reasonable to conclude, therefore, that the multiple correlations for Negroes exaggerate the true relationships.

One criterion dimension which might appear more "predictable" from the multiple regression analysis than from the SES index is delinquent behavior. In this case we find that a very small multiple correlation occurs when some SES items are assigned positive weights and others are given negative weights. The overall "prediction" thus obtained remains trivial (R = .08 for the total sample); moreover, the assignment of some positive and other negative weights to SES items seems incongruous. We conclude, in short, that the zero relationship obtained with the SES index is the more valid indicator of the true relationship between SES and our measure of delinquent behavior.

Table 6

Procedures for Computing Summary SES Index

The summary SES index consists of a mean score computed from transformed versions of the six SES ingredients. Up to two missing data cases were permitted; i.e., the index was computed for any respondent whose data record contained four or more of the six ingredients. In order that the six ingredients would contribute equally to the index score, and in order that missing data would not produce distortions, a linear transformation of each ingredient was undertaken. The transformation consisted of (Step A) multiplying each ingredient by a weighting factor and (Step B) adding a constant; the effect was to give each transformed ingredient a standard deviation of approximately 1.2 and a mean of exactly 5.00.

	Initial Values		Weighting Factor	Values after Weighting		Constant Added	Transformed Values	
SES Ingredient	S.D.**	Mean	(Step A)	S.D.**	Mean	(Step B)	S.D.**	Mean
FATHER'S OCCUPATION*	2.42	3.33	0.5	1.21	1.67	3.33	1.21	5.00
FATHER'S EDUCATION	1.28	2.68	1.0	1.28	2.68	2.32	1.28	5.00
MOTHER'S EDUCATION	1.05	2.76	1.0	1.05	2.76	2.24	1.05	5.00
RESOURCES IN HOME ENVIRONMENT	1.23	4.53	1.0	1.23	4.53	0.47	1.23	5.00
NUMBER OF BOOKS IN HOME	1.17	3.54	1.0	1.17	3.54	1.46	1.17	5.00
ROOMS PER PERSON IN HOME*	1.43	3.10	0.8	1.14	2.48	2.52	1.14	5.00

*Special bracketed versions of Father's Occupation and Rooms per Person in Home were used as a convenience in computing the summary SES index; thus the means and standard deviations shown in this table do not agree with those presented in Table 2.

** Based on clustered sample. See second footnote on page 2-2.

Table 7

Product-Moment Correlations Between
Summary SES Index and "Validating Criteria"

NOTE: Each cell in this table consists of three separate scores as follows:

Total sample (N=2514 weighted cases)
Whites only (N=2177 weighted cases)
Negroes only (N=291 weighted cases)

			Product-Moment Correlations with Validating Criteria								
	Mean Score	Standard Deviation*	Occupational Aspiration	Internal Control	Self-Esteem	Test Anxiety	Grades (9th grade average)	Delinquent Behavior	Quick Test of Intelligence	Matrices Test	Reading Achievement
SUMMARY SES INDEX	4.99 5.07 *4.44*	0.80 0.77 *0.78*	.38 .38 *.32*	.17 .14 *.25*	.12 .15 *.08*	-.14 -.12 *-.17*	.25 .25 *.11*	.01 .00 *-.02*	.45 .38 *.47*	.36 .27 *.45*	.41 .34 *.46*

*Based on clustered sample. See second footnote on page 2-2.

More generally, it seems safe to conclude that the six-item summary SES index is successful in predicting to a number of "validating criteria." It passes the first part of our test of parsimony.

Racial Similarities in SES Relationships. Our second test of a measure of SES is that it be appropriate for application to different racial subgroups. Evidence bearing on this issue is presented in Tables 2, 4, 5, and 7; in each table separate data are presented for white and Negro subgroups (in addition to data for the entire sample).

The intercorrelations among SES items in Table 2, and between SES items and criteria in Table 4, do not indicate any patterns of relationships within white or Negro subgroups that are clearly different from those for the total sample. Occasional differences do appear; however, there is little indication that some SES items are systematically better predictors for one or the other racial subgroup.* The beta weights presented in Table 5 show less overall similarity between racial groups, perhaps, but once again there is no pattern of systematic differences in SES predictors. Finally, the relationships between the six-item SES summary index and the "validating criteria" (shown in Table 7) are generally similar for the two racial subgroups: fairly strong positive correlations with test scores and occupational aspiration; lower positive correlations with grades, internal control, and self-esteem; low negative correlation with test anxiety; and no correlation with delinquency.

The absence of strong systematic racial differences in correlations between the summary SES index and the "validating criteria" provides an answer to one of the major questions motivating this investigation: it appears that the same set of SES items, when equally weighted and combined into a summary score, is usable for both Negro and white subgroups. Given this conclusion, we consider that the six-item summary SES index passes the second part of our test of parsimony.

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*It should be noted that because of the limited number of cases involved, correlations based on the Negro subgroup are much less stable than those for the total sample and the white subgroup. It is not necessary for the purposes of this paper to develop exact confidence intervals for correlations; however, the following guidelines may be helpful. The .05 confidence interval for a correlation based on 291 cases is approximately ± .115. Taking account of missing data and weighting, most correlations for the Negro subgroup are actually based on roughly 200 cases, in which case a .05 confidence interval of approximately ± .14 is more appropriate.

The Meaning of SES. This paper does not undertake to provide a definitive conceptual statement of the meaning of SES. It does, however, document the development of an operational definition. And now that this has been accomplished, it may be useful to take a look at the nature of the resulting measure. The six-item summary SES index consists of one "part" father's occupational status, two "parts" parents' education, and three "parts" having to do with the quality of home environment. While most or all of these ingredients undoubtedly have a bearing upon a family's status in the eyes of the community, they have perhaps even more to do with the quality of home environment available to children. To the extent this is true, the summary SES index is particularly well suited as a measure of one class of family background influences in our study of adolescent boys.

Some Effects of SES. One of the interesting substantive "by-products" of the development of the summary index of SES through the use of "validating criteria" is the set of correlations between SES and the criteria. But we must exercise a good deal of caution in interpreting such relationships; there is a degree of circularity in using a number of measures as "validating criteria" for developing a measure of SES, and then using the same data to consider the effects of SES. This circularity would have been particularly troublesome had we found only one or two SES items that predicted to the "validating criteria," or if certain SES items had worked for one criterion while different items were needed to predict to another. Had such been the case, our relationships with SES might have been heavily influenced by the maximization of random error. In fact, however, of the seven eligible SES items shown in Tables 2 and 4, only one was excluded from the equal-weighted summary index. Thus while the logical circularity remains, we consider the relationships with the SES summary index to be sufficiently sound (and interesting) to warrant some substantive discussion.

As we noted earlier, our measure of SES relates most strongly to occupational aspiration and test scores. It comes as no surprise to find such relationships in general; perhaps somewhat surprising is the finding that the Matrices test of intellectual aptitude is really no more "culture-fair" than the other tests (particularly when we look at the Negro subgroup data). Small to moderate positive relationships appeared between SES and our measures of self-esteem, internal control, and self-reported grades; and a small negative relationship was found between SES and test anxiety. Somewhat to our surprise, no consistent correlation appeared with our measure of delinquency. Since our attempt to measure delinquency was somewhat of an experiment, we must await further study of that dimension before concluding that the zero correlation with SES is valid.

Turning to a comparison of the SES data for white and Negro subgroups, we find that the groups do not differ nearly so much in terms of _correlations_ as in terms of _mean values_. Negro subjects in our study have a mean level on the summary SES index three-quarters of a standard deviation lower than that for whites (see Table 7). There are also mean differences in scores along criterion dimensions (see Table 4), especially those criteria most strongly related to SES -- occupational aspiration and test scores. The question naturally arises: To what extent can the racial differences in mean criterion scores be attributed to differences in our SES measure. While a comprehensive analysis of this issue is beyond the scope of the present paper, we can look briefly at the relationship between SES and racial differences along several of our criterion dimensions.

Figure 1 presents four criterion dimensions as a function of SES, looking separately at white and Negro subgroups. Part A relates SES to scores on the Quick Test. The initial Negro-white difference, prior to any control for SES, was 15 points on the Quick Test. At the lowest SES level shown in Part A of the figure, that difference of roughly 15 points remains. At the next higher SES levels, however, the difference is reduced to about 10 points. (Incidentally, the absence of Negro data in the top SES category reflects the current reality; there were only a handful of subjects in our sample who fell into this category -- far too few to permit reliable estimates.)*

A number of general observations may be based on Figure 1, Part A. First of all, the figure displays the clear positive relationship between our SES index and test scores for both whites and Negroes, with perhaps a slightly stronger effect for Negroes. Second, it is clear that while controlling for

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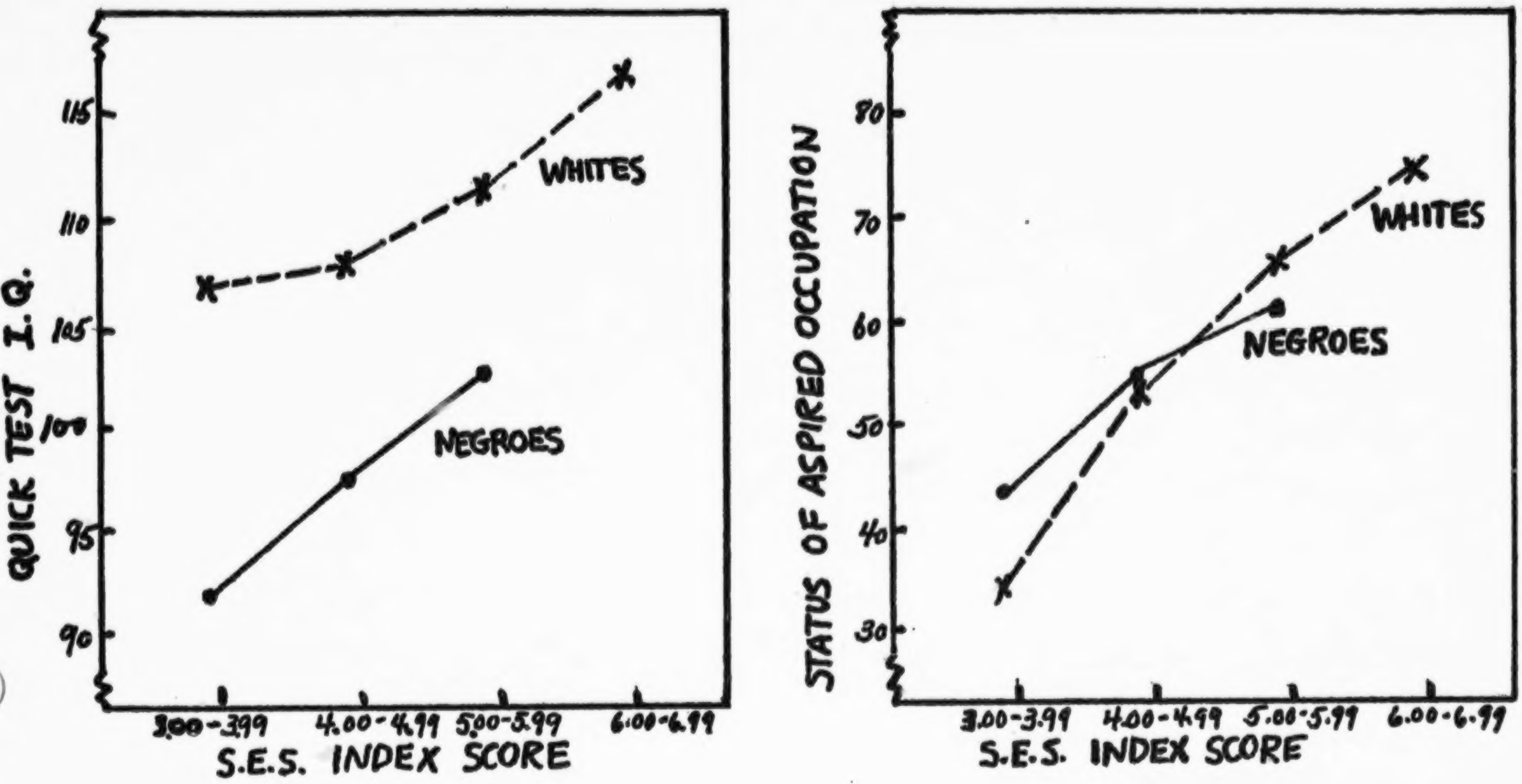
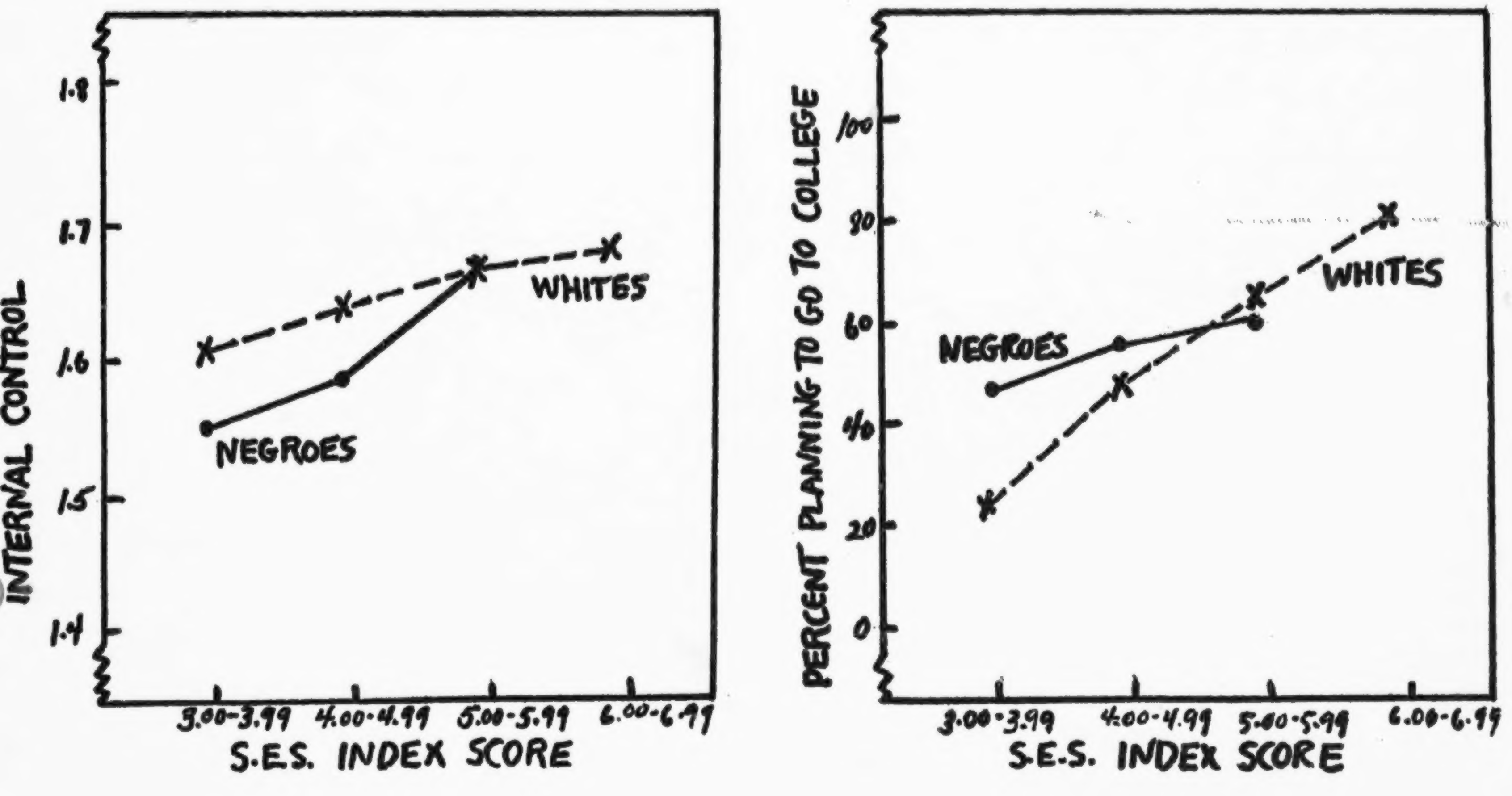
*The calculations for Figure 1 were based on bivariate tables in which the criterion variables (as well as the SES index score) were bracketed into a limited number of categories, with mean values then calculated from the bracketed scores. This procedure was judged sufficiently accurate for purposes of the present illustrative figures.

FIGURE 1 : SOME EFFECTS ON FAMILY S.E.S. ON NEGRO AND WHITE SUB-GROUPS



A. EFFECTS ON QUICK TEST

B. EFFECTS ON ASPIRED OCCUPATION



C. EFFECTS ON INTERNAL CONTROL

D. EFFECTS ON COLLEGE PLANS

SES does reduce at least some of the racial differences in test scores, a good deal of the difference remains to be explained. (A further analysis of whites and Negroes coming from the same schools, reported in Mednick's paper, sheds considerable light on this issue; the findings indicate that factors associated with schools may have much more to do with test scores than does SES alone.)

Part B of Figure 1 presents the relationships between SES and occupational aspirations of white and Negro respondents. While the mean status of aspired occupation is lower for all Negroes than for whites, this difference is clearly eliminated when we control for SES; if anything, at the lowest category of family SES the occupational aspirations are higher for Negroes than for whites.

Part C of Figure 1 relates SES to our measure of internal control (perceived control over environment). The relationship is much weaker than those obtained with test scores and occupational aspiration; and at two of the three levels of SES the racial differences remain. It thus appears that even after controlling for socio-economic level, perceived control over environment is somewhat lower for Negro young men than for whites.

The fourth criterion dimension, presented in Part D of Figure 1, was not included among the original "validating criteria." We found in preliminary investigations that 54 percent of the Negro respondents and 59 percent of the white said that they were planning to go to college. Figure 1, Part D indicates that these plans are clearly related to SES, at least in the case of white respondents. For the Negro respondents, however, the relationship between SES and college plans was much less strong, primarily because a substantial proportion of low SES Negroes plan to go to college. The comparison of whites and Negroes in this figure is most striking at the lowest SES level: whereas 22 percent of the whites are planning for college, the comparable percentage of Negroes is 46.

The parallel between Parts B and D of Figure 1 is worth noting. We find that SES is related to both major dimensions of future plans -- aspired occupation and plans for college. At middle levels of SES, whites and Negroes are very similar; but at the low SES level Negroes have appreciably higher aspirations than do whites. As we move to later stages of this longitudinal study, we will examine the degree to which all of these aspirations can become translated into attainments -- and the degree to which such attainments are affected by factors in the schools.

Intellectual Aptitudes and Abilities
a. Relationship to Selected Criteria
b. Environmental Factors and Racial Differences in Test Performance[1]

Martha T. Mednick
Howard University

The paper I am going to present is divided into two parts. First I will briefly comment on the relationship of the ability measures to the criterion variables already mentioned. Second I am going to present some data bearing on the relationship of certain environmental factors to racial differences in test performance.

In the interest of brevity and clarity, I will report the results of only four of the tests which were administered.[2] These are:

1. The Ammons Quick Test of Intelligence;
2. The United States Employment Service form of the Matrices test (modeled after Raven's Progressive Matrices);
3. A Paragraph Comprehension Test taken from the Gates Reading Survey;
4. and, the Vocabulary Test from the General Aptitude Test Battery (or GATB).

Three of these are classified as intelligence tests, and one, the Gates, as an achievement test.

The relationship of the tests to the selected criteria may be seen in Table 1. The correlations for the total sample and the Negro and white subgroups are presented separately. The table is self-explanatory and I will merely point out that test performance seems to be a fairly good predictor of occupational aspirations, degree of internal control, and test anxiety. The relationships are measurably consistent across the several tests; it is also of interest that the relationships to criteria are very similar for the two racial groups. You may further evaluate this table on your own.

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[1] Paper read at meeting of the American Psychological Association, San Francisco, California, August 31, 1968. An expanded version is in preparation.

[2] Bachman, J. G., Kahn, R. L., Mednick, M. T., Davidson, T. N., Johnston, L. D., Youth in transition: Volume I -- Blueprint for a longitudinal study of adolescent boys. Ann Arbor, Mich.: Survey Research Center, Institute for Social Research, 1967.

Table 1

Product-Moment Correlations Between

Test Scores and Criterion Dimensions

NOTE: Each cell in this table consists of three separate scores as follows:

Total sample (N=2514 weighted cases)
Whites only (N=2177 weighted cases)
Negroes only (N=291 weighted cases)

	CRITERION DIMENSIONS						
	Summary S E S Index	Occupational Aspiration	Internal Control	Self-Esteem	Test Anxiety	Grades (9th grade average)	Delinquent Behavior
QUICK TEST OF INTELLIGENCE	.45 .38 *.46*	.38 .37 *.40*	.23 .21 *.28*	.13 .16 *.22*	-.26 -.26 *-.25*	.36 .39 *.23*	.02 .01 *-.03*
MATRICES TEST	.36 .27 *.45*	.32 .30 *.36*	.19 .15 *.26*	.05 .09 *.05*	-.16 -.12 *-.28*	.25 .27 *.09*	.04 .04 *-.02*
GATB PART J	.45 .39 *.43*	.41 .41 *.44*	.28 .26 *.25*	.17 .22 *.10*	-.26 -.24 *-.29*	.44 .47 *.24*	-.03 -.05 *-.12*
GATES READING ACHIEVEMENT	.41 .34 *.44*	.40 .41 *.45*	.32 .32 *.34*	.12 .18 *.18*	-.25 -.25 *-.30*	.36 .42 *.22*	-.03 -.04 *-.14*

NOTE: Means and standard deviations for variables in this table appear on pages 2-4 and 3-4 of this report.

I now wish to present our findings regarding the effect of some environmental factors on racial differences in test performance. As was mentioned, there are substantial differences in the test performance of the Negro and white subgroups of our representative sample. If you will glance at Table 2, you can see that the magnitude of the mean racial difference exceeds the Standard Deviation[3] based on the total sample, for every test. As Bachman has already pointed out, these differences can only be partially accounted for by the socio-economic and cultural factors included in the SES index. Noting this, we set out to try and find additional factors which might further account for some of these differences.

An examination of the characteristics of our Negro subgroup, provided us with one possibility. One hundred and eighty-three of the 256 unweighted respondents came from schools with an immediately obvious distinguishing characteristic. In our sample of tenth-grade boys all the respondents in each of these schools were Negro. Since it seemed unlikely that this would happen in a school with a substantially mixed population, we concluded that these students were attending virtually segregated schools. The remainder of the sample were attending apparently mixed schools.

There were twenty-five schools in the latter category. The number of Negroes drawn from these schools varied from one or two in a group, to groups containing an equal number of Negro and white students. None of the samples considered here contained a majority of Negroes. The 25 schools were distributed surprisingly evenly geographically; e.g., an equal number of these were in the southern and northeastern parts of the country. While we realized that we would be unable, for this analysis, to separate the influence of regional and rural-urban location from that o other school factors, we, nevertheless, decided to isolate the mixed school subgroup, to pair these respondents with a group of white students attending the same schools, and then to compare the two groups on selected test scores. Two matching operations were carried out. In the first, each Negro respondent was simply paired with a white respondent chosen at random from the same school. In the second matching operation, each Negro respondent was again matched with a white student from his school, this time with additional simultaneous controls for socio-economic status (using the SES index previously described by Bachman), and for intactness of

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[3] The standard deviations reported herein are derived from samples clustered in schools, consequently they may systematically underestimate the true standard deviation of the population. The extent of this underestimation has not yet been calculated, so for the present we must assume that the true population values are probably somewhat larger than the sample SD's reported here.

Table 2

Ability Measures: Means and Standard Deviations for the Total Population, Negro and White Subgroups and Matched Groups

		A[a] Representative Sample			B Matched Groups		
					I[b]		II[c]
		Total N=2514	Negro N=291	White N=2177	Negro N=60	White N=60	White N=60
QUICK TEST OF INTELLIGENCE	Mn	108.48	95.50	110.42	104.90	110.60	109.00
	SD[d]	12.41	14.78	10.78	10.89	12.17	12.06
MATRICES TEST	Mn	22.37	16.04	23.28	20.38	22.92	22.66
	SD[d]	5.81	7.17	5.00	5.74	5.79	5.34
GATB PART J	Mn	18.86	11.87	19.86	15.93	19.48	19.16
	SD[d]	6.63	6.08	6.11	5.57	6.75	5.95
GATES READING ACHIEVEMENT	Mn	36.01	28.73	37.05	33.50	35.79	36.38
	SD[d]	6.24	9.02	4.94	6.68	6.83	4.85
S E S INDEX SCORES	Mn	4.63	4.10	4.71	4.50	4.64	4.52
	SD[d]	.80	.79	.78	.84	.73	.78

[a] The numbers in these groups include weighted cases. The Total N includes Negroes, whites, and a third category, coded "other."

[b] A group of white and Negro students matched by school (unweighted cases).

[c] An additional group of white students matched by school, socio-economic status, and intactness of family (unweighted cases).

[d] Based on clustered sample. See third footnote on page 3-3.

of family. Intactness of family indicates whether or not the respondent is living with both natural parents. The data comparing the test performance for these groups are presented in Part B of Table 2, and are graphically depicted in Figure 1. The bracket on the left represents the equivalent of one standard deviation.[4]

It is quite clear that the magnitude of the racial differences decreased dramatically when the school match was made. The further match for SES and family intactness generally resulted in very slight additional reductions in the degree of difference.

It should be noted from Figure 1 that the changes which did occur with the two matchings, were similar for three of the four tests. A comment about the results found with the "culture-fair" Matrices test (Figure 1c) is in order at this point, since it certainly did not live up to its advance billing. It turned out to be about as sensitive as the "culture-unfair" tests to the cultural variables which were being manipulated.

Turning to an evaluation of the significance of these findings, we realize that in making this particular kind of match, we cannot pinpoint a single variable as most important in reducing the test differences. Obviously, when we matched the students on the basis of schools, we were not simply matching on degree of integration. All of the special characteristics that the schools may have, such as school size and quality, region of the country, rural-urban location, etc. were also being matched. Whatever the specific factors are, however, it is clear that the average performance of Negroes in these schools is higher than that of the total Negro sample. Furthermore, being in these racially mixed schools does not seem to be related to lower test performance on the part of the white students. This is in general agreement with the findings recently reported by Coleman.

While the remaining test differences are relatively small, we might still offer some speculations about factors, not testable in our study, which might serve to further account for such results. There is of course the strong liklihood, as Robert Rosenthal has shown, of differential treatment (based on teacher expectations) of Negro and white students even within the integrated classroom, so that the Negro students in these schools may not be performing optimally. Furthermore, motivational factors operating in the testing situation, such as

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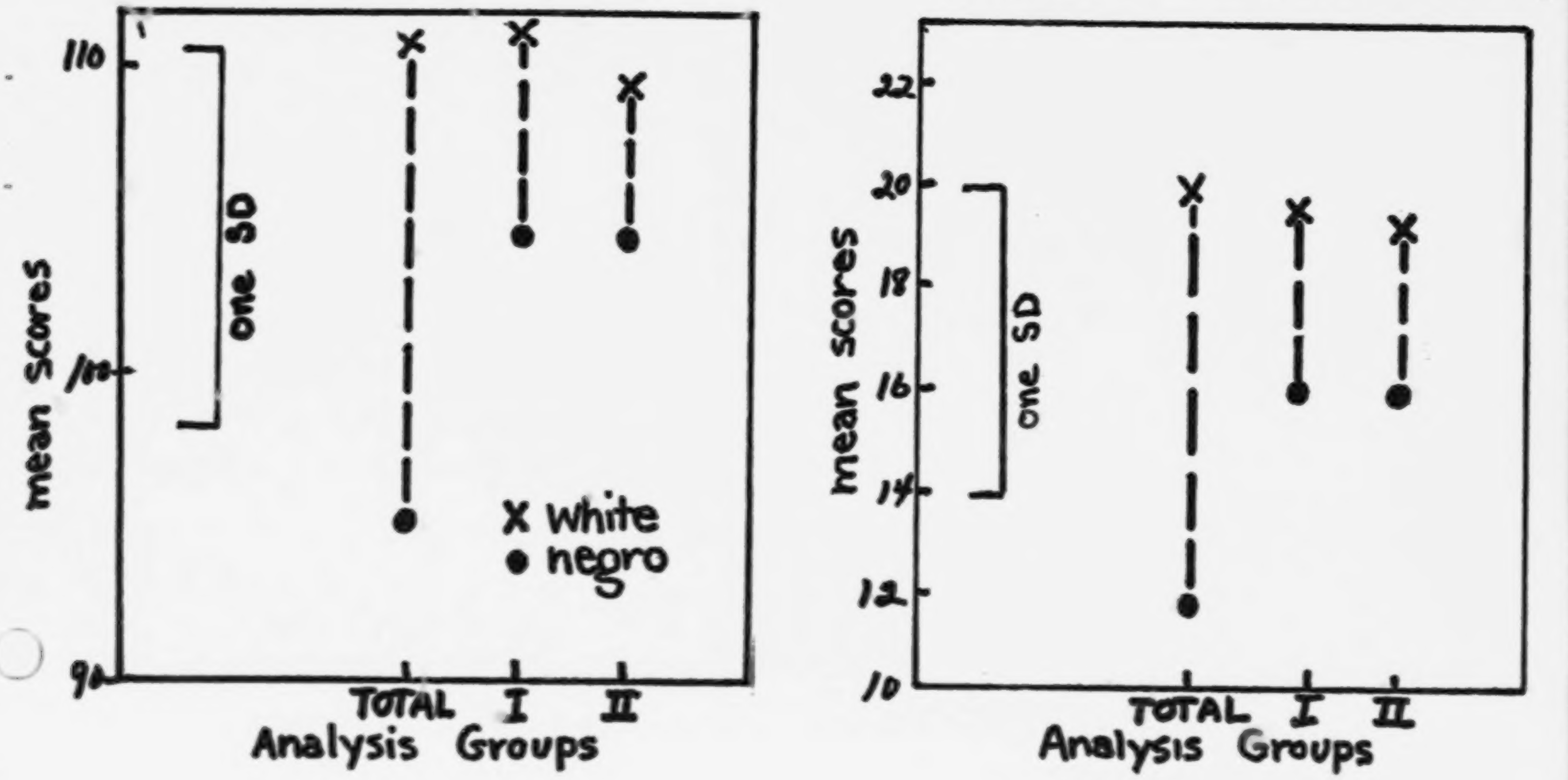
[4] Based on clustered sample. See third footnote on page 3-3.

FIGURE 1 : TEST PERFORMANCE OF TOTAL AND MATCHED NEGRO AND WHITE GROUPS

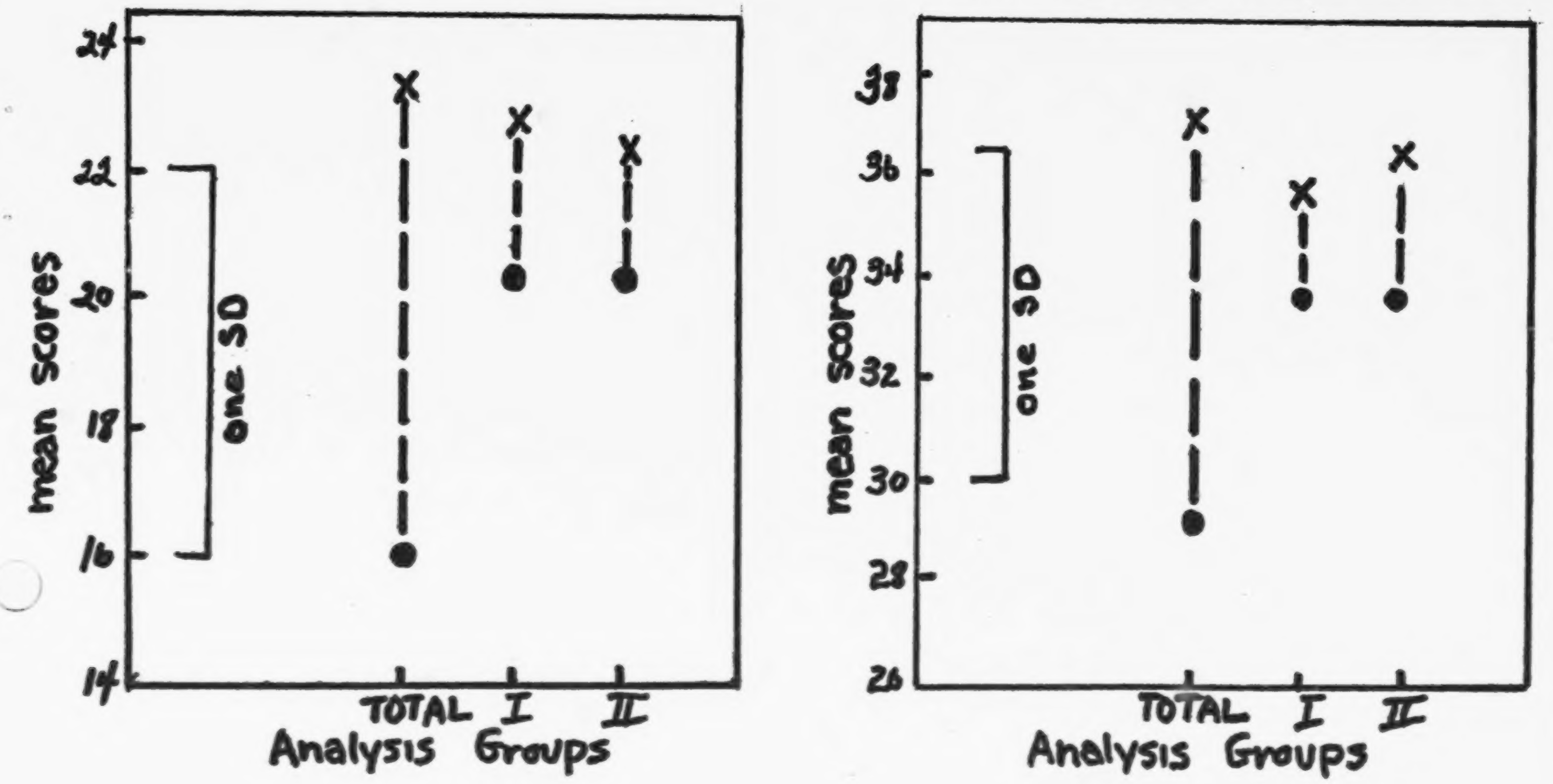
A. QUICK TEST

B. GATB - J (VOCABULARY)



C. MATRICES

D. GATES READING



those suggested by Irwin Katz's work, cannot be overlooked. Our students were in the main, tested by white examiners; this may have also operated to further reduce the performance level of the Negro students in the mixed setting. White students would not be affected in this manner.

In sum, it has been shown that several kinds of criterion variables are related to performance on a variety of tests, and that these relationships are similar for the two racial groups. In addition, when socio-economic, cultural, and school factors are simultaneously controlled, the observed racial differences in test performance are markedly reduced on measures of both achievement and intelligence.

Preliminary Investigation of Status Inconsistency Effects

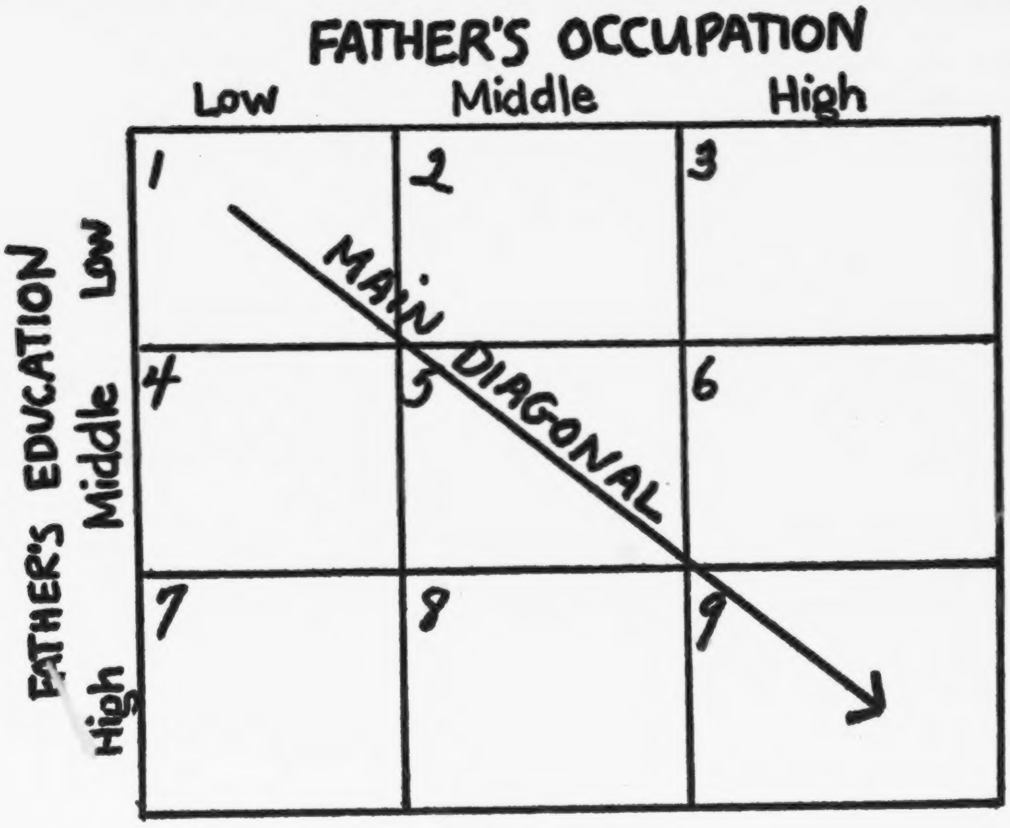
Terrence N. Davidson
Survey Research Center
The University of Michigan

In his paper, Bachman reported on the development of a summary index of socio-economic status which combines separate measures of six characteristics of the home and family backgrounds of our respondents. As an additional step in our analyses of the effect of family background characteristics upon the plans and behaviors of adolescent boys, we undertook to discover if inconsistencies along some of these SES dimensions might affect criterion scores in a manner not indicated by the SES index score itself. For example, imagine the families of two boys in our sample; family A consists of a father who has completed the eighth grade and a mother who is a college graduate; in family B, both the mother and father are high school graduates. The contribution of parents' education to our SES index would be identical for both families; but it is quite conceivable that the structural differences in these two families produce quite different effects on the plans and behaviors of the two boys in our sample.

The kind of inconsistency found in family A is typically called "educational discrepancy." Another type of status inconsistency occurs when a parent has an occupation that does not seem to "match" his attained education. For example, a father who is a college graduate may be employed on an assembly line. This second type of inconsistency, called "paternal incongruity", could also produce measurable effects on the plans and behaviors of boys. This paper will endeavor to see if these two status inconsistency measures produce differences in a selected set of boys' criterion variables.

To begin, let us look at paternal incongruity. In this paper, our measures of father's education and occupation have each been reduced to three levels. Of the total number of fathers whose educational level was provided, 44 percent had not completed high school and are described as "Low", the 33 percent who were high school graduates are described as "Middle", and the 23 percent who had re-

TABLE O: PATERNAL INCONGRUITY


FATHER'S OCCUPATION
Low
Middle
High
FATHER'S EDUCATION
Low
Middle
High
1
2
3
4
5
6
7
8
9
MAIN DIAGONAL

ceived at least some college education are described as "High." A similar categorization of father's occupational status was undertaken: the 56 percent who are below a value of 40 on the Duncan scale are described as "Low", the 21 percent whose Duncan values range between 40 and 59 are described as "Middle", and the 23 percent whose Duncan values were 60 or greater are defined as "High." Although these trichotomous versions of the father's education and occupation have been used previously by other investigators, and are used (throughout) in the tables and figures accompanying this paper, they are clearly arbitrary and represent only a first approximation to more refined classifications to be developed later.

Table 0 is an example of the type of tables to be used with this paper. Note that in this table, cells 1, 5, and 9 fall along the diagonal labelled "Main Diagonal"; in the tables to follow, the entries in these cells will represent the data for boys whose father's education and occupation are defined for the present as being "congruent" or "consistent." All cells which are not part of this main diagonal will thus contain the data for boys from families which may be described as "paternally incongruent" or "inconsistent." Cells 2, 3, and 6 will contain data from boys with "occupationally over-achieving" fathers; that is, these cells represent inconsistent families where the father's occupational level is high in relation to his educational level. Similarly, cells 4, 7, and 8 represent families which may be characterized as having "occupationally under-achieving" fathers. In the tables to follow, each cell entry is the mean value of the criterion variable under consideration for all boys located in that cell. The number of cases upon which the mean was calculated is also given in each cell.

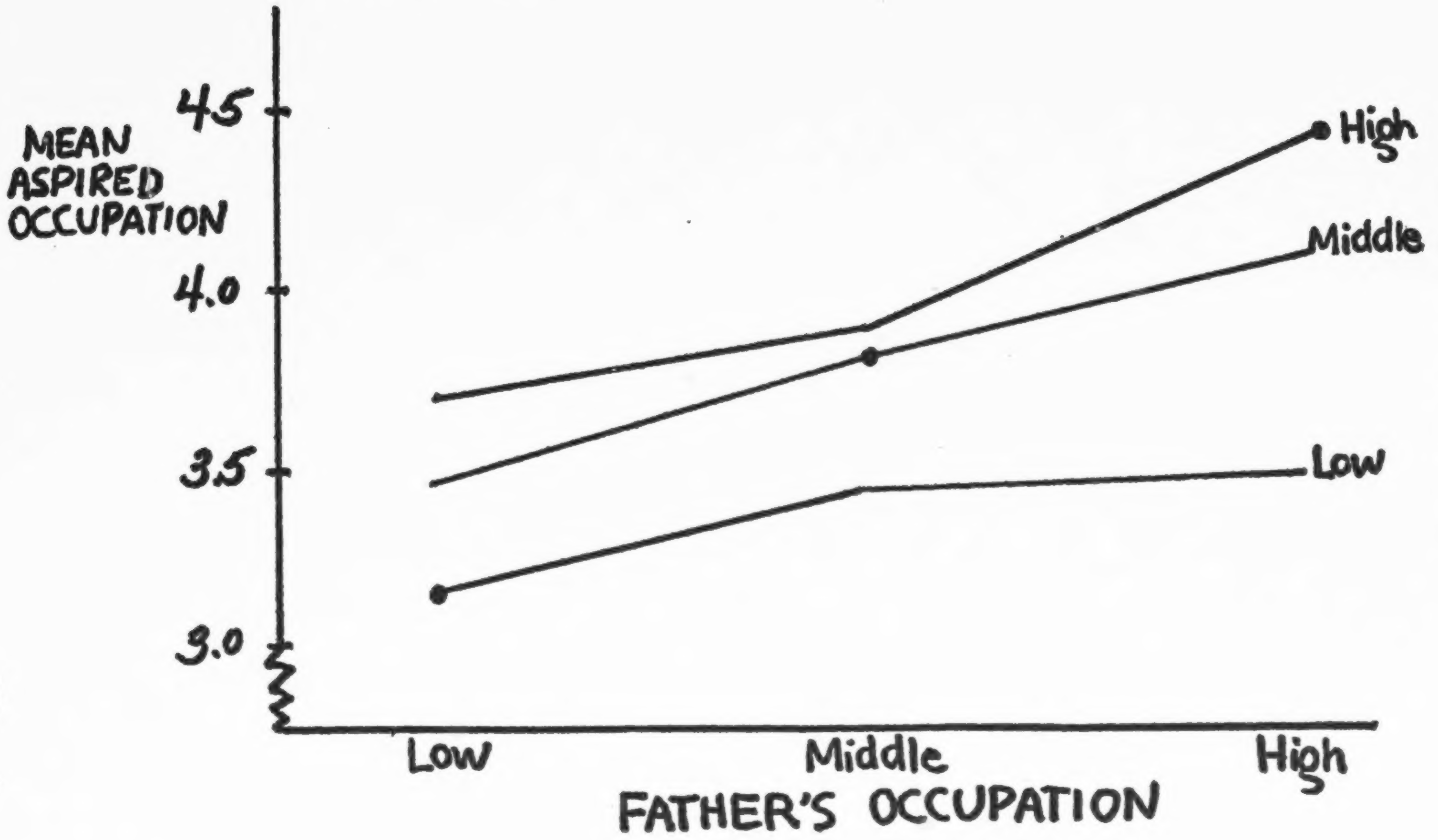
Let us first examine the inconsistency data relative to the boys' Aspired Occupation, presented in Table 1 and Figure 1. The figure presents the average levels of boys' aspired occupation plotted for each level of father's education. The three heavy points along the lines indicate the points of consistency; they represent the cells along the main diagonal of the corresponding table. Figure 1 shows that the educational and occupational levels of the father are both positively related to the boys' aspired occupation as we would expect. Both correlate about .3 with the boys' aspired occupation. However, you will note that there is no evidence of interaction between the variables of classification in their prediction of the criterion variable; thus further analyses of these data for evidence of status inconsistency does not seem profitable.

PATERNAL INCONGRUITY AND BOYS' ASPIRED OCCUPATION

TABLE 1: OBSERVED CELL MEANS

		FATHER'S OCCUPATION		
		Low	Middle	High
FATHER'S EDUCATION	Low	3.15 (550)	3.41 (106)	3.49 (37)
	Middle	3.44 (256)	3.79 (145)	4.06 (117)
	High	3.67 (70)	3.83 (76)	4.35 (219)

FIGURE 1



PATERNAL INCONGRUITY AND BOYS' TEST ANXIETY

TABLE 2-1: OBSERVED CELL MEANS

FATHER'S EDUCATION	FATHER'S OCCUPATION Low	Middle	High
Low	1 3.03 (696)	2 3.02 (145)	3 2.98 (52)
Middle	4 2.84 (327)	5 2.94 (192)	6 3.09 (146)
High	7 2.52 (90)	8 2.97 (99)	9 2.61 (290)

TABLE 2-2: EXPECTED VALUES OF CELL MEANS

FATHER'S EDUCATION	FATHER'S OCCUPATION Low	Middle	High
Low	2.92	3.10	3.01
Middle	2.87	3.05	2.96
High	2.61	2.79	2.70

FIGURE 2

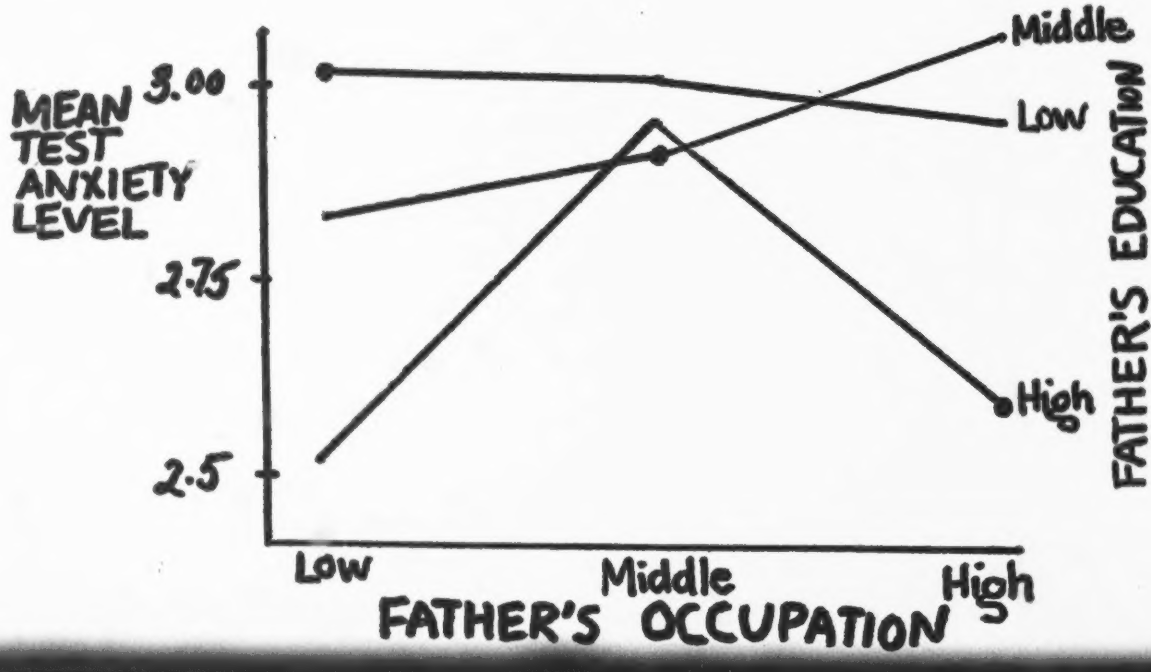


TABLE 2-3: OBSERVED MINUS EXPECTED VALUES OF CELL MEANS

FATHER'S EDUCATION	FATHER'S OCCUPATION Low	Middle	High
Low	.11	−.08	−.03
Middle	−.03	−.11	.13
High	−.09	.18	−.09

A somewhat different picture emerges when we examine the relationship between Test Anxiety and Paternal Incongruity. Table 2-1 and Figure 2 both present evidence of slight negative relationships between each variable of classification and Test Anxiety. But Figure 2 also indicates interaction between the father's occupation and education levels, thus raising the possibility of the presence of a paternal incongruity effect. Futher evidence supporting this possibility may be seen by examing the pairs of "inconsistent cells" which reflect the same degree of incongruence; that is, the Test Anxiety is greater in cell 2 than in cell 4, in cell 3 than in cell 7, and in cell 6 than in cell 8. In short, there seems to be evidence that inconsistency between father's education and occupation can either increase or lessen the expected Test Anxiety of the boy; the average Test Anxiety for boys from families in which the father is an "occupational over-achiever" is less than is the boys' Test Anxiety average for families in which the father is an "occupational under-achiever." Let us now see whether this pattern of cell means results from the effect of the variables of classification alone, or whether ther is an additional effect of paternal incongruity.

We can estimate the effects of the three levels on each of the variables of classification alone, assuming an additive model and no interaction, and thus arrive at an expected mean value for each cell in the three by three table. For Test Anxiety, these estimates are displayed in Table 2-2. The differences between the observed values, already presented in Table 2-1 above, and these expected values are displayed in Table 2-3. In this table, a positive value in a cell indicates that the amount of Test Anxiety observed for that specific combination of father's occupation and education was greater than the simple additive model would predict; a negative cell value indicates a lower Test Anxiety than the additive model would lead one to expect. Thus, when either the occupation or the education of the father is low and the other variable of classification is either middle or high, the average boys' Test Anxiety is less than we might expect. But in families where either the father's education or occupation is middle but the other is high, the boys' Test Anxiety average is greater than expected. This relationship is by no means an easy one to explain in terms of paternal incongruity. And in any case, the Test Anxiety most certainly cannot be explained in terms of the father's occupational over or under-achievement.

Yet another picture of the possible effect of paternal incongruity may be seen in the data describing the college plans of our respondents. This criterion variable, college plans, was derived from a set of interview questions which asked the boy to describe his future plans. If we look at Table 3-1 and Figure 3, we

PATERNAL INCONGRUITY AND BOYS' COLLEGE PLANS

TABLE 3-1: OBSERVED CELL MEANS

FATHER'S EDUCATION	FATHER'S OCCUPATION Low	Middle	High
Low	48 (708)	46 (149)	48 (52)
Middle	55 (333)	69 (193)	70 (149)
High	60 (90)	74 (99)	82 (291)

TABLE 3-2: EXPECTED VALUES OF CELL MEANS

FATHER'S EDUCATION	FATHER'S OCCUPATION Low	Middle	High
Low	40	49	53
Middle	58	67	71
High	65	74	78

FIGURE 3

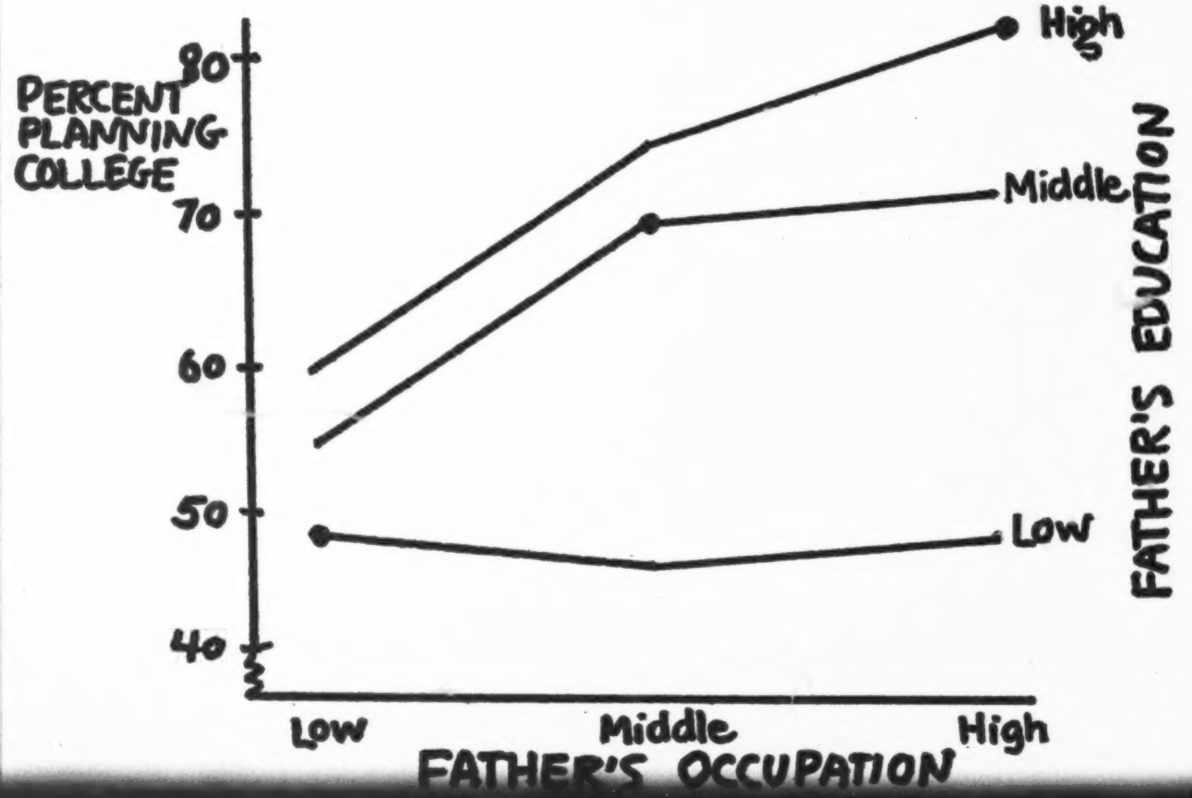


TABLE 3-3: OBSERVED MINUS EXPECTED VALUES OF CELL MEANS

FATHER'S EDUCATION	Low	Middle	High
Low	1 8	2 -3	3 -5
Middle	4 -3	5 2	6 -1
High	7 -5	8 0	9 4

EDUCATIONAL DISCREPANCY AND BOYS' ASPIRED OCCUPATION

TABLE 4-1: OBSERVED CELL MEANS

	MOTHER'S EDUCATION		
FATHER'S EDUCATION	Low	Middle	High
Low	3.01 (404)	3.33 (278)	3.93 (41)
Middle	3.49 (117)	3.71 (360)	3.97 (73)
High	3.49 (43)	3.99 (185)	4.40 (181)

FIGURE 4

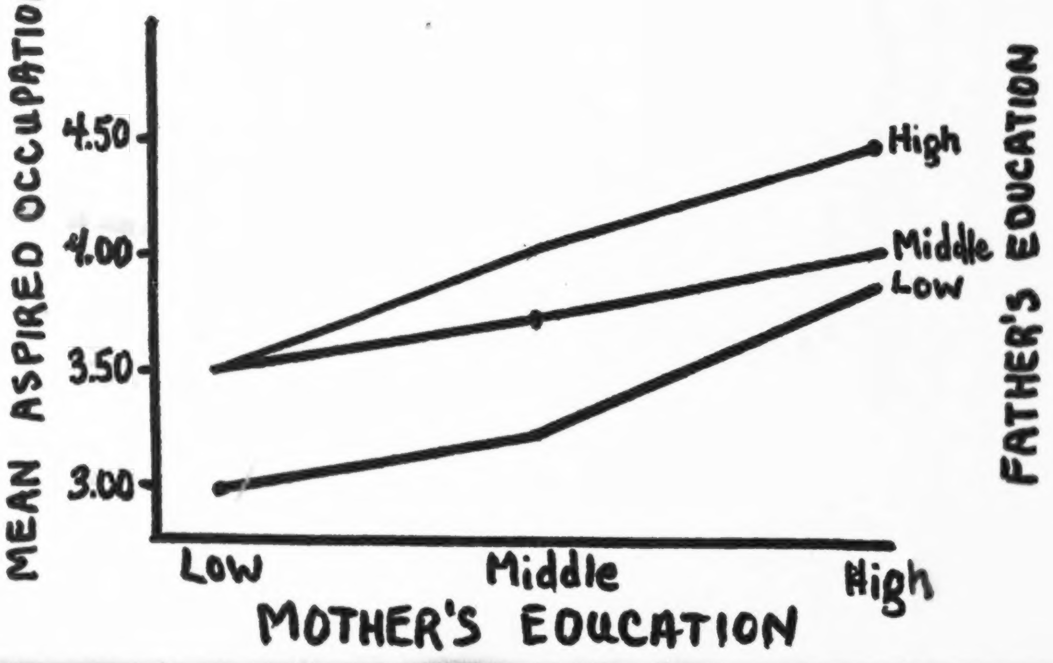


TABLE 4-2: EXPECTED VALUES OF CELL MEANS

	MOTHER'S EDUCATION		
FATHER'S EDUCATION	Low	Middle	High
Low	3.05	3.40	3.82
Middle	3.35	3.70	4.12
High	3.59	3.94	4.36

TABLE 4-3: OBSERVED MINUS EXPECTED VALUES OF CELL MEANS

	MOTHER'S EDUCATION		
FATHER'S EDUCATION	Low	Middle	High
Low	−.04	−.07	.11
Middle	.14	.01	−.15
High	−.10	.05	.04

again see evidence that both father's occupation and father's education are positively related to the boys' college plans for those whose fathers have a middle or high education, but the picture is not at all clear for families in which the father's education is low. (A cell entry in Table 3-1 is the percent of the total number of boys in that cell who plan to attend college.) Is there any evidence of the effect of paternal incongruity in these data? Let us proceed as before to estimate the expected cell values and then to calculate the difference between the estimated and the observed values for each cell in the table. The results of these operations are displayed in Tables 3-2 and 3-3. From Table 3-3 it can be seen that in each inconsistent or off-diagonal cell (cells 2, 3, 4, 6, 7, and 8) the percent of boys actually planning to go to college is either equal to or less than the estimated cell value; however, for each of the three consistent cells (cells 1, 5, and 9), the percent planning on attending college is greater than would be expected. In summary, boys from families which may be described as being paternally incongruent are less likely to report having college plans than would be expected if the effects of father's occupational and educational levels were purely additive. Furthermore, it doesn't seem to matter whether the incongruity is the result of the fathers' "occupational over- or under-achievement"; in either case, the percent planning college is less than expected.

Let us now examine the same data for evidence of the second type of inconsistency, educational discrepancy. Classifying the mothers' educational level in a manner identical with that of the fathers' education places the 34 percent who have not completed high school in the category we shall call "Low", the 49 percent who are high school graduates in the "Middle" category, and the 17 percent who have attended college in the "High" category. We can now group our respondents by the educational levels of both father and mother, thus forming three by three tables in which the inconsistent families are again represented in the off-diagonal cells.

For example, Table 4-1 and Figure 4 present the discrepancy data for the boys' aspired occupation. Tables 4-2 and 4-3, as before, present the expected and observed minus expected values for each cell based upon a purely additive model. Although the deviations shown in 4-3 are relatively large in some cells, the pattern of these deviations is rather difficult to explain in terms of educational discrepancy.

EDUCATIONAL DISCREPANCY AND BOYS' TEST ANXIETY

TABLE 5-1: OBSERVED CELL MEANS

	MOTHER'S EDUCATION		
FATHER'S EDUCATION	Low	Middle	High
Low	3.06 (518)	2.97 (373)	2.75 (52)
Middle	2.86 (151)	2.94 (470)	2.89 (89)
High	3.02 (54)	2.77 (233)	2.40 (237)

TABLE 5-2: EXPECTED VALUES OF CELL MEANS

	MOTHER'S EDUCATION		
FATHER'S EDUCATION	Low	Middle	High
Low	3.06	2.97	2.76
Middle	3.03	2.94	2.73
High	2.86	2.77	2.56

FIGURE 5

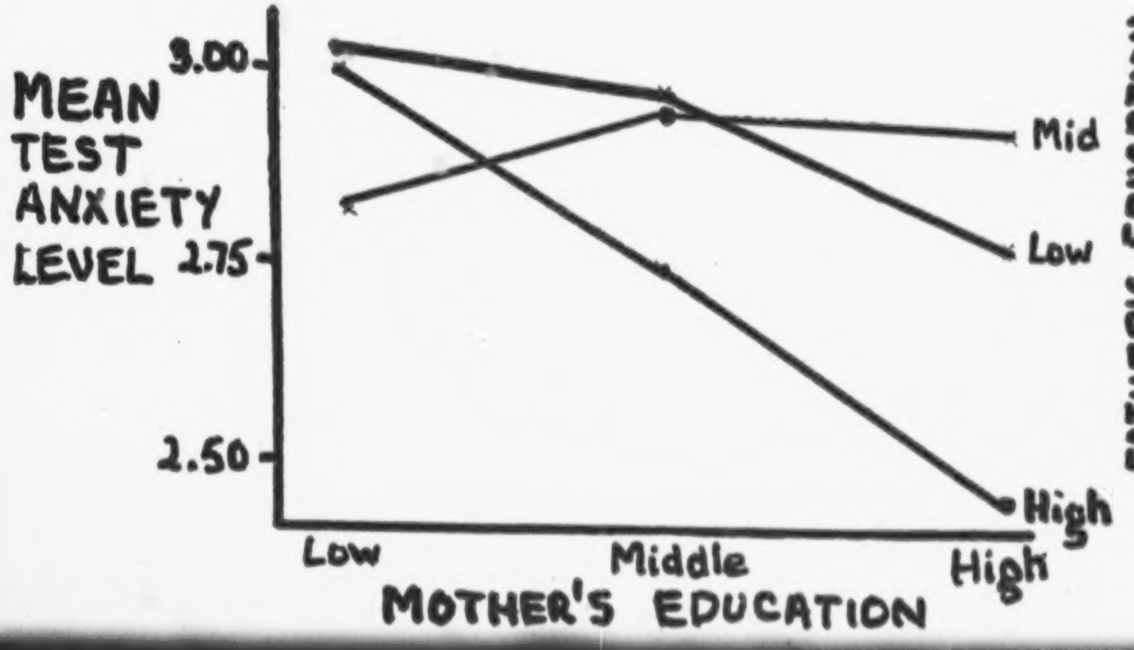


TABLE 5-3: OBSERVED MINUS EXPECTED VALUES OF CELL MEANS

	MOTHER'S EDUCATION		
FATHER'S EDUCATION	Low	Middle	High
Low	1 0	2 0	3 −.01
Middle	4 −.17	5 0	6 .16
High	7 .16	8 0	9 −.16

EDUCATIONAL DISCREPANCY AND BOYS' COLLEGE PLANS

TABLE 6-1: OBSERVED CELL MEANS

	MOTHER'S EDUCATION		
FATHER'S EDUCATION	Low	Middle	High
Low	43 (328)	49 (377)	67 (55)
Middle	56 (154)	63 (478)	75 (89)
High	55 (49)	73 (234)	83 (237)

TABLE 6-2: EXPECTED VALUES OF CELL MEANS

	MOTHER'S EDUCATION		
FATHER'S EDUCATION	Low	Middle	High
Low	41	52	65
Middle	53	64	77
High	58	69	82

FIGURE 6

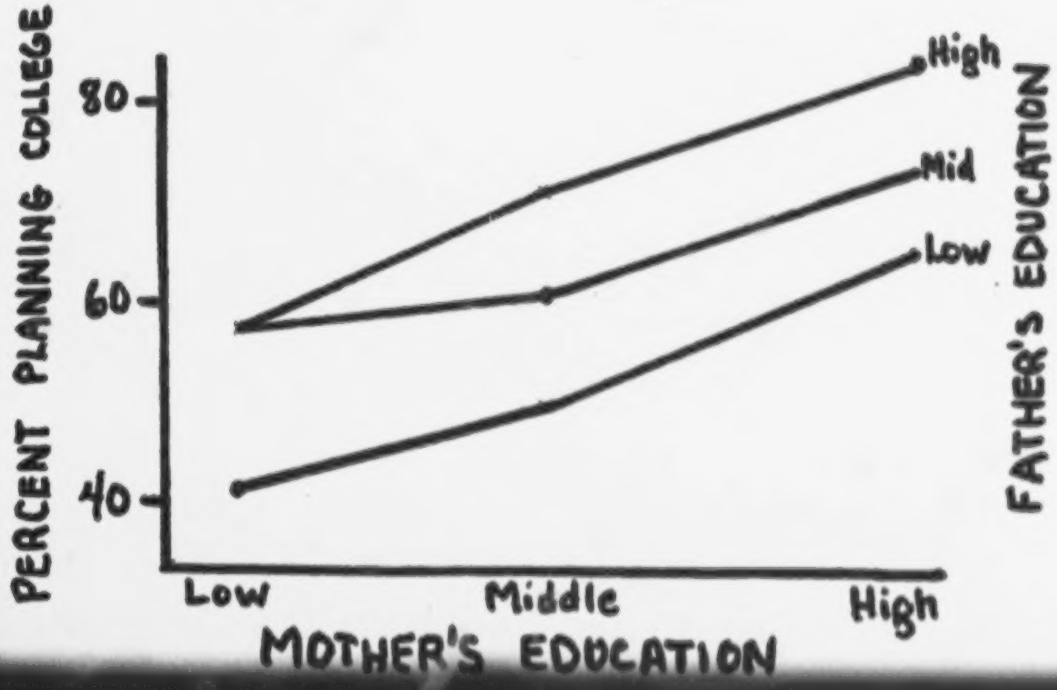


TABLE 6-3: OBSERVED MINUS EXPECTED VALUES OF CELL MEANS

	MOTHER'S EDUCATION		
FATHER'S EDUCATION	Low	Middle	High
Low	2	-3	2
Middle	3	-1	-2
High	-3	4	1

Similarly, the data for the boys' test anxiety (Figure 5 and Tables 5-1 through 5-3) give no evidence of educational discrepancy effects. The deviations from expectancy in these data are indeed strange; the "fit" seems to be either very "good" (cells 1-3, 5, and 8) or very "bad" (cells 4, 6, 7, and 9). But again, it is very difficult to imagine that this pattern of deviations is a function of educational discrepancy.

Finally, the deviations from expectancy in the data for college plans (Figure 6 and Tables 6-1 through 6-3) are relatively small and not in accord with an educational discrepancy explanation.

In addition to the analyses reported here, similar investigations have been performed with the criterion measures of self-esteem, internal control, grades, and delinquency. As a whole, these analyses give little, if any, support to the notion that paternal incongruence and educational discrepancy are important explanatory variables. The investigations will be continued using more refined operational definitions of these inconsistency measures. However, with the single exception of the paternal incongruity effect on college plans, there is very limited evidence thus far in our study that either type of status inconsistency as traditionally defined exerts strong or consistent effects on the plans or behaviors of adolescent boys.

DIMENSIONS OF ADJUSTMENT IN ADOLESCENT BOYS: NEGRO-WHITE COMPARISONS

Richard Bloom
Rutgers University

The problem of mental health and adjustment spans the total population from the very young to the mature adult and the aged. Within this broad age span, the period of adolescence represents an important transition point involving dramatic physical and psychological changes. As such adolescence would seem a relevant age point in which to evaluate adjustmental patterns. However, even within this defined population there is likely to be considerable variation in important social and psychological characteristics. One such characteristic deals with the racial background of the adolescent. Being a white or Negro specifies a range of environmental experiences which may exert a profound influence on an individual's style of adjustment.

In the present study the data were limited to self reports of adolescents concerning their mental health status, thereby eliminating other sources of adjustmental evaluation, such as the assessment of actual behaviors or clinical judgments. Though focussing only on self reports of adjustment, it is evident that there are many facets to such self descriptions as suggested by the following indices: psychosomatic complaints (MacMillan, 1957); perceptions of self (Roger, 1951); satisfaction in marriage (Terman & Wallen, 1949); and satisfaction with life (Inkeles, 1962). In commenting on these diverse perspectives, some writers (e.g., Johoda, 1958; and Scott, 1958) have suggested that a number of criteria are not only equally valid but are required for a comprehensive assessment of mental health status. Thus, rather than selecting and emphasizing any given criteria of adjustment the present study takes a multiple criteria approach, using the methods of factor analysis in empirically identifying dimensions of adjustment as they may exist for Negro and white adolescent samples. It will thus be possible to study both the similarities and differences in the factor structures which exist for two diverse adolescent samples.

In relation to this study objective some methodological considerations are relevant. First, it has been assumed that the description of adjustmental states can be most meaningfully approached through a set of distinctive criteria. Consistent with this assumption an orthogonal rotation procedure was used on the factors extracted from the data matrices. While an orthogonal solution does not guarantee that separate factors will emerge, it does enhance this possibility. Thus, it should be recognized that the findings to be reported cannot be completely separated from the particular statistical strategies selected for this investigation.

Second, the fact that the data source used in this investigation consists of self reports raises the inevitable question of the respondent's honesty in answering a personal questionnaire. While effort was made to minimize this distortion, there can be no assurance that response bias has been completely eliminated from the data. This bias is likely to increase the tendency of some respondents to admit or deny distress across a broad spectrum of self reports. However, since factor analysis methods are more likely to be influenced by systematic rather than generalized response bias, the measurement error which does emerge from this distortion is not expected to be serious for the kind of analysis used in this investigation.

Methods

Subjects

The subject sample was composed of tenth-grade boys, both white and Negro living throughout the United States. The respondents were selected by a multistage probability sampling procedure. The first stage consisted of 88 strata, each representing a geographical area representing approximately two million people. The second stage consisted of a high school in each of these strata; the third stage consisted of a random sample of approximately thirty boys in each of the selected schools. The sampling procedure thus provided an essentially bias free representation of tenth grade boys in the United States.

This sampling design yielded a total of 1909 white and 291 Negro adolescents. To equate the sizes of the two samples, a random subsample of the white group was drawn yielding a total of 310 white adolescent, which served as the comparison for the available Negro sample.

The data for this study were collected as part of a longitudinal investigation of adolescent boys sponsored by the United States Office of Education.[1] One phase of this program involved the collection of responses to a closed end questionnaire dealing with a wide range of motivational, attitudinal, and affective states. The questionnaire was administered in one session to the groups of 30 tenth graders randomly chosen within the sample of high schools.

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[1] The investigator would like to thank Dr. Jerald Bachman of the University of Michigan without whose cooperation this study could not have been completed.

From the questionnaire, a total of 74 items intended on an a priori basis to assess adjustmental states were tentatively included for data analysis. However, a question was excluded from further consideration if 45 percent of the responses piled up into one of its five alternative response categories. In the case of eight items with a yes-no format, the cut-off point was 55 percent piling up into one of the two categories. Using this criterion, a total of 40 items were retained in the factor analyses. These are listed in Table 5-1.

- - - - - - - - - - - - - - - - -

Insert Table 5-1 about here

- - - - - - - - - - - - - - - - -

The 40 variables were intercorrelated using a missing data correlation program to adjust the data in those instances in which the responses were omitted. In all cases, the N for the correlation matrices approximately the sample size of the Negro and white groups.

The Negro white correlation matrices were then factor analyzed using the principal components solution with ones placed in the diagonals of matrices. Kaiser's Varimax criterion (1958) was applied to obtain orthogonal rotation solutions. Finally, Kaiser's factor comparison program (1960) was used to obtain indices of the degree of similarity between the two factor structures.

Results

The first eight factors from each matrix were extracted and rotated. In general, the rotation procedure yielded a satisfactory simple structure in which the extracted factors accounted for approximately 45 percent of total variance in each matrix. Each of the eight factors in one matrix showed substantial relationship to some particular factor in the other matrix. A summary description of these similarities is listed in Table 5-2.

- - - - - - - - - - - - - - - - - -

Insert Table 5-2 about here

- - - - - - - - - - - - - - - - - -

One similarity (Dimension A) involves a broad associative linkage among items concerned with negative affective states--i.e., feelings of depression, general anxiety, irritability, guilt, and tension.

A second area (Dimension B) of similarity concerns the clustering of variables, the content of which focused on aggressive impulses, the overt expression of aggression, and global irritability. Based on a content examination of these associated variables, such feelings and expressions of hostility appear generalized as well as directed toward a specific target, such as the teacher.

A third area (Dimension C) of congruence deals with variables predominately concerned with physical correlates of emotional states. This included admitting to such physical symptoms as rapid heartbeat, headaches, and general tenseness. The fact that there were substantial loadings in such variables as aggressive impulses, irritability, and general anxiety suggests that these are physical reactions to underlying psychological states.

An additional similarity (Dimension D) is the clustering of variables dealing with a breakdown of the individual's sense of attachment toward society and social relationships as evinced by feelings of isolation and being unwanted and unloved by others. The fact that these variables cluster together for both the Negro and white adolescents suggest that the Anomie scale (Srole, 1956) from which these variables were obtained exhibited reasonable internal coherence across diverse samples. However, in comparison to Factor VI (white matrix), the corresponding Negro factor showed more association with other states (e.g., general anxiety and aggressiveness), suggesting that the Anomie factor may not be as clearly organized for the Negro as it is for the white sample.

A fifth area of similarity (Dimension E) concerns the emergence of a bipolar factor, at one end of which cluster variables focusing on positive or optimistic reactions toward one's self and circumstances (e.g., satisfaction with life), with the other pole associated with variables concerned with pessimistic reaction and negative feeling states including feelings of depression and isolation from society. Though present in both the Negro and white samples, this bipolar dimension evinced more coherence in the latter.

A further area of congruence (Dimension F) between the two samples is the clustering of variables involving anxiety related to test taking experiences in the classroom. This patterning was most clearly manifested in the white sample where all of the four items dealing with test anxiety clustered together in factor VIII (white factor structure) in the absence of substantial loading for items dealing with general or global anxiety. Related to this discussion is Dimension G which has as a predominant characteristic a configuration of items dealing with global or generalized anxiety states. In the case of the Negro sample especially, this configuration is suggestive of a broad ranging dimension of anxiety encompassing both non-specific anxiety as well as test anxiety as a situational reaction.

A final factor overlapping (Dimension H) in the two samples shows a combination of items whose major focus is guilt and general anxiety. The organization of these variables has some parallel to theoretical perspectives, especially when viewed from a psychodynamic framework. Specifically, both anxiety and guilt are hypothesized (e.g., Sears, 1957) as reactions toward unacceptable impulses, such as aggressive feelings. That content dealing with guilt, anxiety and to a lesser extent aggressive feeling (found in the Negro sample) were associatively linked in this dimension is thus consistent with the above theoretical picture.

Discussion

The results of the parallel factor analyses on Negro and white adolescents shows both similarities and differences. With respect to similarities, the results show that adolescents, regardless of racial background, utilize a number of fairly distinctive frames of reference in describing their mental health states. There is thus little evidence that the adolescent samples responded with a global evaluative dimension. Interestingly enough, the rather specific focus that adolescents used in describing their experienced distress remains fairly stable across diverse adolescent samples.

It may well be that there are some adolescents, or for that matter adults, who respond to questions dealing with personal distress in a generalized fashion, i.e., admitting distress in one area implies admitting to it in another. Perhaps Dimension A in which a number of areas of negative affect cluster together typifies that segment of the population who view their adjustmental state in this global fashion. It is likely, however, that for specific groupings of adolescents, considerable differentiation exists regarding their adjustmental states.

That a number of fairly distinctive factors emerged for the two samples suggests the difficulty of identifying any single factor or combination of factors as the optimal index of adolescent disturbance or adjustment. Rather than attempting to formulate a comprehensive index of adjustment, it would probably be more useful to select a given dimension as a relevant predictor of adjustment in a particular situation. For example, in predicting adolescent adjustment in school, it probably would be most appropriate to focus on Dimension F dealing with test anxiety. On the other hand, predictors to the kinds of disturbance which may be emphasized in psychiatric screening might involve a heavy weighting of Dimension C in which self reports of physical symptoms of distress cluster together.

The differences observed in this study do not involve any marked qualitative differences in the configuration of the factor structures between Negro and white adolescents. Rather the differences focus on the clarity and consistency of dimensions extracted for each sample. In particular, in the Negro sample Dimensions B, D, E, F, and G tended to exhibit less clarity and organization than in the case of the white adolescent sample. It is difficult to explain such differences on the basis of the available data. One speculation might be that Negro adolescents are exposed to more stressful environmental circumstances which in turn may produce adjustmental patterns which are considerably more diffused and less defined than is the case for white adolescents.

In summary, the observed communality between the Negro and white factor structures suggest important dimensions of adjustment which remain invariant across different social groupings. Indeed, if one were looking for basic parameters of mental health, an accumulation of evidence on such communality existing for different age, social, and racial groups would be most important. The differences observed between the two samples, though not dramatic, are suggestive of the influence of environmental factors in shaping subjective expressions of adjustment.

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TABLE 51

LISTING OF ITEMS USED IN THE FACTOR ANALYSES

Variables	Item
1	I feel that I'm a person of worth, at least on an equal plane with others.
2	I feel that I can't do anything right.
3	I feel like swearing.
4	I feel like smiling.
5	I feel like losing my temper at my teachers.
6	No one cares what happens, when you get right down to it.
7	The life of the average man is getting worse, not better.
8	I feel tense.
9	People don't really care what happens to the next fellow.
10	I lose my temper easily.
11	I worry about whether my body is growing the way it should.
12	I get irritated a lot more than people know about.
13	I am very satisfied with life.
14	I feel like a powder keg ready to explode.
15	I find a good deal of happiness in life.

Table 51
Continued

Variables	Items
16	When I am in bed at night trying to go to sleep, I find that I am worrying about something.
17	I feel the future looks bright.
18	I am worried.
19	I think I worry more than other students my age.
20	I feel like being a little rude to my teachers.
21	I feel bad about my mistakes.
22	I worry that I might get hurt in some accident.
23	Things seem hopeless.
24	I feel nervous.
25	I feel down in the dumps.
26	Without knowing why, I get a funny feeling in my stomach.
27	I feel depressed.
28	It is hardly fair to bring a child into the world the way things look now.
29	I blame myself when things go wrong.
30	I do things that I feel guilty about afterwards.
31	I do things that make me feel sorry afterwards.

Table 51
Continued

Variables	Items
32	I lose my temper at my teachers.
33	I get to feel very panicky when I have to take a surprise exam.
34	While taking an important exam, I find myself thinking about how much smarter the other students are than I am.
35	If I were to take an intelligence test, I would worry a great deal before taking it.
36	I sometimes feel my heart beating very fast during important tests.
37	Have you ever been bothered by nervousness, feeling fidgety and tense?
38	Are you ever troubled by headaches or pains in the head?
39	Have you ever been bothered by your heart beating hard?
40	Are you ever bothered by nightmares?

TABLE 5-2

DIMENSION DESCRIPTIONS

Dimension Label	Corresponding Factors in the Sample Matrices		Similarity Index[a]	Variable Loadings on this Dimension[b]	
	Negro	White		Negro	White
A. Negative Affect	1	1	.68	8,16,17,18,19, 21,24,25,26, 27,29	8,12,14,16,17, 18,19,23,24, 25,26,27,31,37
B. Implicit and Overt Expression of Hostility	8	2	.89	5,8,10,14,15, 20,24,25,26, 27 ,31,32	3,5,10,14,20, 32
C. Physical Expression of Anxiety	3	4	.87	2,14,24,37,38, 39,40	10,22,37,38, 39,40
D. Alienation from Society (Anomie)	4	6	.93	1,3,6,7,9,10, 12,16,28,32	2,6,7,9,23, 28

[a] This index represents the maximum cosine value between pairs of factors in the separate matrices.

[b] Major emphasis is placed on factor loadings of .30 or higher occurring in the two factor structures. Underlined loadings indicate a negative sign.

TABLE 5-2 (Continued)

Dimension Label	Corresponding Factors in the Sample Matrices		Similarity Index[a]	Variable Loadings on this Dimension[b]	
	Negro	White		Negro	White
E. Optimism vs. Pessimism	2	3	.78	4,13,15,17,$\underline{25}$	$\underline{1}$,$\underline{4}$,$\underline{13}$,$\underline{15}$,$\underline{17}$, 23,25,27,28
F. Test Anxiety	5	8	.78	1,4,27,33,36	33,34,35,36
G. Global Anxiety	6	7	.66	11,22,34,38	1,4,10,11,16
H. Guilt Reactions	7	5	.78	16,18,19,20, 30,31,35	12,21,22,29, 30,31

[a] This index represents the maximum cosine value between pairs of factors in the separate matrices; underlined loadings indicate a negative sign.

[b] Major emphasis is placed on factor loadings of .30 or higher occurring in the two factor structures.

Achievement Motivation, Grades, and Instrumentality*

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The projective Need for Achievement measure developed by McClelland, _et al_. (1953) was included in the nationwide study of tenth-grade boys referred to in this symposium. It was adapted to the survey research technique following the procedures for doing so first used by Veroff, _et al_. (1960) (cf. Bachman, _et al_., 1967). A Test Anxiety scale which closely parallels the Mandler-Sarason (1952) Test Anxiety Questionnaire (cf. Bachman, _et al_., 1967) was also included. Verbal reports of the average grade received by each student in the previous year were obtained. In addition, the Perceived Instrumentality of grades for future career success (cf. Isaacson and Raynor, 1966) was measured. This was done by asking each student to rate the importance of his high school grades for making his future plans work out. It was therefore possible to relate academic performance in high school to two major motivational dimensions--Perceived Instrumentality, and achievement-related motives (the latter being a combined measure of Need for Achievement and Test Anxiety). The analysis represents an extension to a nationwide high school sample of work first undertaken with college students (cf. Isaacson and Raynor, 1966; Raynor, 1967; 1968).

To obtain ratings of Perceived Instrumentality, five statements describing various degrees of "importance" were provided. Almost three-quarters of the sample chose the most extreme statement indicating that grades are "very important" in making future plans work out. These students were called High in Perceived Instrumentality; the remainder were called Low in Perceived Instrumentality.

The results (see Table 1) indicate both a main effect due to achievement-related motives and a main effect due to Perceived Instrumentality, with little interaction between these two factors. Reported grades were

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Table 1

Mean reported grades as a function of achievement-related motives (n Achievement-Test Anxiety) and Perceived Instrumentality of grades

	Perceived Instrumentality			
n Achievement-Test Anxiety	N	Low	N	High
High-Low	152	2.44	473	2.65
Low-High	173	2.17	440	2.46

Analysis of Variance

Source of Variation	MS	df	F
n Achievement-Test Anxiety (Motives)	12.65	1	23.43
Perceived Instrumentality (PI)	14.94	1	27.67
Motives x PI	.38	1	<1
Within Groups (Error)	.54	1234	

significantly higher for students with high achievement-related motivation (i.e., High Need for Achievement and Low Test Anxiety).[*] And students High in Perceived Instrumentality reported significantly higher grades than those Low in Perceived Instrumentality.[*] When these two effects are combined, a difference of more than one half grade appears between extreme groups (i.e., between students High in both achievement related motivation and Perceived Instrumentality and students Low in both these dimensions).

The results for this nationwide high school sample are similar to those found for a college sample when comparable measures of academic performance and Perceived Instrumentality are considered. For both populations student groups received relatively higher grade point averages for a term if they rated grades as important for future success.

It is of interest to note that in three different college samples, individual differences in achievement-related motives *interacted with ratings of Perceived Instrumentality when a particular course grade and its rated importance for future career success were considered*. That is, different results were consistently obtained when a particular course rather than all courses for the term were used in this kind of analysis. Results for the college samples indicated that students High in achievement-related motivation received higher grades in an introductory psychology course when that grade was considered important for future career success than when it was not. However, those Low in achievement-related motivation received either the same or a lower grade when they considered the course important for future success than when they did not. The effects of Perceived Instrumentality were significantly different within the two motive groups.

The theory of achievement motivation recently summarized by Atkinson and Feather (1966) can be applied to the prediction of academic performance. An elaboration of this theory has been proposed by the author (Raynor, 1967; 1968) which takes into account sources of motivation which are aroused by concern over distant future success as well as concern over immediate success. The elaborated theory predicts an interaction between achievement-related motive measures and Perceived Instrumentality when academic performance is primarily motivated by achievement-related concerns. The theory also considers so-called extrinsic sources of motivation for academic performance aroused by anticipation of attaining incentives which are not related to achievement *per se*, such as money, social approval, and influence. The elaborated theory predicts a main effect due to Perceived Instrumentality, but no interaction between achievement-related motives and Perceived Instrumentality, when extrinsic concerns primarily motivate academic performance. The theory therefore provides a means of accounting for differences in results obtained when a particular course grade rather than the grade point average is used as a measure of academic performance. The theory suggests that when grades *in general* are considered, sources of motivation for academic performance are primarily extrinsic. However, when the criterion is grades in a *particular* course, the impact of Perceived Instrumentality and achievement-related motivation is expected to be interactive.

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[*] $p < .01$, 2-tailed.

Returning to the present findings, we are encouraged by the consistency of results between studies of young men in high school and those in college. First, it indicates some construct validity for the procedures used in the Youth in Transition study to measure achievement motivation and related dimensions. Second, and more important, it is an encouraging sign for those interested in developing a general theory of the determinants of achievement-oriented behavior which is based on empirical findings replicated in a wide variety of situations.

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SUMMARY

WORKING PAPER 3: SOME STUDIES OF BACKGROUND FACTORS, ACHIEVEMENT, AND MENTAL HEALTH IN A NATIONWIDE SAMPLE OF ADOLESCENT BOYS

This document presents several analyses first reported at the annual convention of the American Psychological Association, August 31, 1968. All papers are concerned with the Youth in Transition project--a nationwide longitudinal study of adolescent boys conducted by the Survey Research Center under the sponsorship of the United States Office of Education.

Paper 1 - Design and Sample for a Nationwide Longitudinal Study of Adolescent Boys. Lloyd D. Johnston

Paper 2 - The Development of a Summary Measure of Socio-Economic Status. Jerald G. Bachman

Paper 3 - Intellectual Aptitudes and Abilities a. Relationship to Selected Criteria b. Environmental Factors and Racial Differences in Test Performance. Martha T. Mednick

Paper 4 - Preliminary Investigation of Status Inconsistency Effects. Terrence N. Davidson

Paper 5 - Dimensions of Adjustment in Adolescent Boys: Negro-White Comparisons. Richard Bloom

Paper 6 - Achievement Motivation, Grades, and Instrumentality. Joel O. Raynor

One common theme may be noted in several analyses that deal with racial differences and similarities. The papers by Bachman and Bloom indicate that the same dimensions of socio-economic status and mental health can be applied to both subgroups. Mednick's chapter further suggests that overall racial differences in test scores are dramatically reduced when one focuses on individuals in more closely matched situations (i.e., whites and Negroes exposed to the same school, region, socio-economic level, etc.). At the risk of over-simplifying, it seems to us that the similarities which have thus far appeared between white and Negro subgroups in our study are more impressive than any differences.

END

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